1969

(3)

TURKEY CREEK

SUMTER COUNTY
SOUTH CAROLINA

DETAILED PROJECT REPORT

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS

CHARLESTON, SOUTH CAROLINA

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SERIAL NO. 20

SANGO (15 May 68) 8th Ind
SUBJECT: Transmittal of Detailed Project Report on Turkey Creek, South Carolina

DA, Charleston District, Corps of Engineers, P. O. Box 919, Charleston, S. C. 29402 28 January 1969

TO: Division Engineer, South Atlantic, ATTN: SADYR

1. The following numbered paragraphs relate to OCE comments contained in the 4th Indorsement of this correspondence.

2. (a) Based on a field reconnaissance it was determined that the flooding problem extends upstream to the present project limits. A substantial portion of the flood waters at the upper limit of the project originates outside of the eastern city limits. Flood damages occurring in Reaches B and C result from floods exceeding a 3 to 9-year frequency. The existing channel has sufficient capacity to handle floods equal to the design capacities (3-5 year) of the storm drains that outlet into it.

(b) Floods which get out of banks cause damage to 214 residences, 15 businesses, and several public owned facilities. The problem in Reach C is further complicated by the low capacity of the existing railroad culvert at station 223+35. The undersized culvert and the high fill over it are causing ponding with about the 5-year and higher frequency floods. (See plate 2). Table 1 below compares annual benefits, annual charges, and benefit-to-cost ratios by reach. Reach A (ending at Fulton Street) would not be justified if considered alone. Most benefits occur in Reaches B and C; however, Reach A channel must be improved before these benefits can be realized. Ending the project at Fulton Street would not provide the flood protection needed.

(c) It is my opinion that there is Federal interest in Reaches B and C because most of the damages occur here resulting from high frequency floods and a substantial amount of water is coming from outside the city limits. It is evident that the project must extend up to the present limits to insure a complete functioning project.

TABLE 1

COMPARISON OF ANNUAL BENEFITS,
ANNUAL CHARGES, AND BENEFITS TO COST RATIO BY REACH

Reach	Annual Benefits	Annual Charges	B/C
A	1,200	8,200	.2
A & B	11,500	9,800	1.2
A, B, & C	32,000	12,400	2.6

Based on 3¼% interest.

3. Breakdown of bridge changes is as follows. Cost shown includes contingencies, supervision, engineering and design.

Federal

Railroad Culvert Modification at Sta. 223+35	
Cost to Add Additional 8' x 8' box culvert	$26,000

Non-Federal

Fulton Street (New bridge)	$ 5,000
Houser Street (New bridge)	5,000
Boulevard Rd. (Modification)	3,500
East Calhoun Street (additional box culvert)	7,200
Total Bridge	$20,700

4. Consideration has been given to increasing the size of the proposed channel, however, it is my conclusion that the recommended channel is the optimum project that should be provided. Rationale for this conclusion is given in the following answers to comments contained in paragraph 4 of the 4th Indorsement.

a. This is correct. Flow records are not available.

b. This is correct. Generalized data were used to construct the unit hydrographs.

c. The infiltration rates selected, as discussed in par. 25a, pg. 12, are considered to be reasonable. Further, checking the infiltration rates with the City Engineer certainly deserves some credence.

d. The Regional-Frequency Data for the North Carolina Coastal Plain was used only as a guide to determine the discharge frequency relationships. The discharge frequency relationships shown in the report were adjusted to reflect urbanization. Further, the discharge frequency relationships were checked using peak discharges obtained from computing storm runoff for various frequency storms. The final discharge frequency relationships shown in the report were rationalized from the above data, and it is our judgement, that the discharge frequency relationships adequately represent present and future urbanization.

e. I believe that the runoff coefficients, as presented, do reflect expected future urbanization in the watershed which will occur with or without the project. The basic premise for developing the unit hydrographs was to evaluate a reasonable SPF. To recompute the SPF using lesser infiltration rates would not materially affect the area inundated by the SPF. The additional area inundated by a change in the SPF, when reduced to an average annual damage, would not be worth the effort.

f. As stated in d, I believe the discharge frequency curves reflect improved conditions.

5. I agree that paragraph 32 and Table 8 could be misleading. This paragraph and table along with other related ones have been modified and are attached for insertion in the report.

6. Paragraph 21, page 7 and 7a, has been rewritten to reflect the views and actions of local interest on flood plain management. Copies of the revised pages are inclosed for insertion in the report.

7. Damages were evaluated to the 100-year level and there would be residual damages above the 100-year frequency flood. The revised Table A-1 which replaces same in the report is the form tables in future reports will follow.

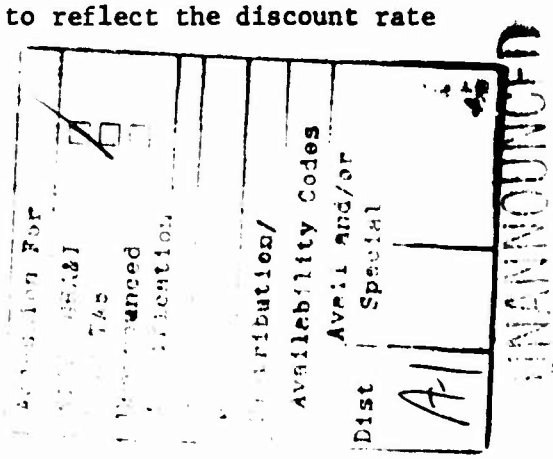
8. The 100-year flood plain under existing conditions has an area of 1203 acres. The channel improvement will reduce the 100-year flood plain by only about 60 acres although the flood stages are substantially reduced. The 60 acres that would be made flood free would not contribute substantially to enhancement benefits because a lot of the area is already developed and the flood threat to this area is not generally recognized. Therefore, it is not a great influence to market value. In real estate the largest contributing factor to market value is location. A large part of the Turkey Creek flood plain is within the city limits of Sumter thus reducing the normal effects of flood control on market value.

9. Soil Conservation Service comments are attached.

10. Spoil will be leveled where local interest can provide the necessary easements, otherwise it will be shaped and seeded in accordance with EM 1110-2-38 and ER 1165-2-2. This will be worked out with local sponsor and included in plans and specifications for construction.

11. Change notice 20 to EM 1120-2-101 was considered, however, no utility modifications required by this project are considered subject to Federal costs. Local interests have agreed to provide all utility modifications.

12. The inclosed revised pages update the report to reflect the discount rate change from 3-1/4 percent to 4-5/8 percent.



SANGO (15 May 68) 8th Ind (Cont'd)
SUBJECT: Transmittal of Detailed Project Report on Turkey Creek, South Carolina

13. Study funds for Turkey Creek are exhausted and further modifications of the plan will require additional funds and time. The amount of funds required will depend on the extensiveness of the modifications. It is recommended that the report be approved as submitted with the revised pages attached hereto.

BURKE W. LEE
Colonel, Corps of Engineers
District Engineer

1 Incl (15 sets)
Revised Pages w/SCS Comments
(7, 7a, 8, 15, 16, 18, 19,
A-2, & A-3)

ACKNOWLEDGMENT AND IDENTIFICATION OF PERSONNEL

1. The preparation of the report was administered by:

Colonel Robert E. Rich, Corps of Engineers, District Engineer

Jack J. Lesemann, Chief, Engineering Division

Jack F. Rasmussen, Chief, Project Planning Branch

2. This report was prepared under the direction of Edwin L. Shull, Chief, Small Flood Control Section. R. Molinaroli, Dean M. Zander, John F. Murphree, Kenneth E. Russ, and John M. Saboe contributed to the report.

3. The United States Army Engineer District, Charleston, is appreciative of the cooperation rendered in connection with the study by personnel of a number of other offices and agencies, particularly the following:

City of Sumter

Sumter County

U. S. Fish & Wildlife Service

S. C. Highway Department

DETAILED PROJECT REPORT

TURKEY CREEK, SOUTH CAROLINA

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PERTINENT DATA

1. Physical Features.

Land Clearing	91.17 Acres
Channel Excavation	232,100 Cu Yds
Spoil Shaping & Seeding	63.0 Acres

2. First Costs.

Federal

Channel Excavation	$ 60,300
Land Clearing	31,600
Spoil Shaping & Seeding	12,600
Bridge Removal	800
Tree Protection	1,000
Contingencies	15,900
Sub-Total	$122,200
Engineering and Design	18,300
Supervision and Administration	8,800
R. R. Culvert Modification	26,000
Construction Costs	$175,300

Non-Federal

Lands, Easements	47,100
Bridge and Utilities	23,900
Legal and Engineering	2,500
Total Non-Federal Costs	$ 73,500
TOTAL FEDERAL AND NON-FEDERAL COSTS	$240,800

DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 919
CHARLESTON, S.C. 29402

SANGO

SUBJECT: Detailed Project Report, Turkey Creek, Sumter County, South Carolina

Division Engineer, South Atlantic
ATTN: SADYR

AUTHORITY

1. Authority. Preparation of a Detailed Project Report on flooding on Turkey Creek, Sumter County, South Carolina under Section 205 of the 1948 Flood Control Act, as amended, was authorized by SADER 3rd Indorsement dated 20 December 1967 to a letter from this office dated 17 July 1967, subject "Reconnaissance Report, Turkey Creek, Sumter County, South Carolina."

SPONSORING ORGANIZATION

2. Sponsors. The City of Sumter and Sumter County are the local sponsoring organizations. The sponsors have requested a detailed study of flooding on Turkey Creek. If a flood control project proves economically feasible, they have given full assurances of providing the necessary local cooperation.

EXISTING PROJECTS

3. Existing Projects. There are no existing or pending flood control projects being considered on Turkey Creek by the State of South Carolina or by Federal Agencies.

4. Prior Reports. The Charleston District, Corps of Engineers, prepared a reconnaissance report on Turkey Creek dated 17 July 1967 with the

recommendation that a study be made under Section 205 of the Flood Control Act of 1948, as amended. No prior detailed reports have been made.

DESCRIPTION

5. Location. Turkey Creek is located in Sumter County, South Carolina. It originates northeast of the city of Sumter and flows southward through the eastern edge of the city to the Pocotaligo River. The total length of Turkey Creek is about 5.8 miles. See Plate 1.

6. Drainage Area. Drainage areas at selected points within the Turkey Creek Basin are given in Table 1. The total drainage area of the Turkey Creek sub-basin is approximately 8.5 square miles.

TABLE 1

Drainage Area Data
Turkey Creek

Location	Drainage Area sq. mi.
Station 33+50 - Hwy 521	8.21
Station 98+90	5.49
Station 202+00 - Houser Street	2.33
Station 223+35 - SCL Railroad	1.97
Station 240+00 - End of Project	.91

7. Topography. Topography in the Turkey Creek Basin is generally flat to gently rolling. The average ground slope along the creek is about 0.1 percent toward the Pocotaligo River. Elevations in the Basin vary from 115 feet above mean sea level at the Pocotaligo River to 170 feet in the upper reach. The flood plain resulting from the 100-year frequency flood varies in width from 400 to 3,200 feet.

8. Geology. The materials forming the Coastal Plain, of which the Turkey Creek Basin is a part, were transported by waters of the Atlantic Ocean and coastal streams and deposited in beds of sand, gravel, silt, and clay. Soils have developed from these unconsolidated deposits through normal development processes. Generally sandy soils are found at higher elevations and fine silts and clays at lower elevations. Some soils have well-defined profiles while other younger soils do not.

9. Soils. Generally soils in the watershed are well drained to moderately well drained, with sandy loam or loamy sand surfaces and variable sand-clay subsoils. Subsoils along the channel are somewhat heavier except for that portion extending into the Pocotaligo River which is low, wet swampland made up of unconsolidated sands, silts, clays, and peat.

10. Channel Characteristics. The existing channel, except below Hwy 521, has good alignment and depth but lacks capacity to carry flood waters. Deposition of silt and debris in the channel has progressively reduced channel capacity. Slope of the channel bottom is 4 to 5 feet per mile and channel depth varies from 3 to 8 feet. The channel capacity below Hwy 521 finally becomes diffused before reaching the main run of the Pocotaligo River.

11. Roads and Bridges. Seven roads and two railroads cross Turkey Creek. Three highway bridge openings and one railroad culvert will require enlargement. Ponding has been experienced above the SCL railroad at Station 223+35. This results from the elevated roadway fill and the small opening for passage of flood water.

ECONOMIC DEVELOPMENT

12. Land Use.

a. Agricultural - Lands devoted to crops are located in the southeastern portion of the Turkey Creek Basin. No significant acreage of cropland is located within the flood plain. The cultivated fields are high enough above the stream that outlets for internal drainage can

be obtained under existing conditions. The flood plain in Reach A is wooded and consists generally of low quality water-tolerant hardwoods. Improvement of the Turkey Creek channel is not expected to provide significant agricultural drainage or flood reduction benefits.

(1) The importance of agriculture is declining in the watershed. A large acreage of prime agricultural land has been converted to urban uses. It is expected that most agricultural lands in the basin will be put to other uses within the next two decades.

b. Urban. The principal land use in the Turkey Creek Basin is for urban purposes. Some of the major uses include single and multi-family residences, light and heavy industries, commercial retail, and agricultural supply and commodity storage. There are about 245 residential structures, 12 retail establishments and 3 industries within the 100-year flood plain. Total estimated value of residential development within the 100-year flood plain, excluding land and furnishings, is $1,709,000. Commercial and industrial properties have an estimated value of $3,629,000 including contents.

13. Population. The 1960 population of Sumter County was 74,941. The City of Sumter had a population of 20,185 in 1950 and 23,062 in 1960, an increase of 14.3 percent. The Turkey Creek 100-year frequency flood plain under existing conditions has an estimated population of 980.

14. Income Sources. The county non-agricultural employment increased from 10,912 in 1940 to 21,030 in 1965. Agricultural employment decreased from 5,215 to 2,270 during the same period. Major sources of employment are in the manufacture of furniture, textiles, steel fabricating, food processing, printing and dyeing, foundry products, retail sales, and agricultural supply and marketing.

CLIMATOLOGY

15. Climate. The average temperature in the area for the month of January is 47.5° F. and the average for July is 80.6° F. Temperatures above 100° F. or below 15° F. are infrequent. Average date of the first killing frost is November 10 and average date of last killing frost is March 20. Average growing season is 235 days.

16. Rainfall. For the period 1931 - 1967, annual rainfall has varied from 70.69 inches in 1959 to 27.11 inches in 1933 and averaged 45.48 inches. Maximum rainfall for a single month was 18.02 inches which occurred in September 1945. Highest monthly averages occur during June, July, August, and September. A climatological station is located in the city of Sumter. Monthly and annual precipitation data for the station are given in Table 2.

PROBLEMS UNDER INVESTIGATION

17. Flooding. Flooding of homes, businesses, industries, and public properties is the problem along Turkey Creek. A 10-year frequency flood inundates 779 acres having $2,264,600 in development. The 100-year frequency flood inundates 1203 acres with $5,238,000 in development. Annual damages to existing development is $38,200. The main cause of flooding is inadequate channel capacity and inadequate bridge and culvert openings under four highways and a railroad. Water surface profiles for 2, 10, 100-year and Standard Project floods under existing conditions are presented in Plate 2. Drainage is not a problem since the existing channel has good depth and has adequate capacity to carry annual flows in the damage reaches. Water quality and water supply problems were not included in this study.

18. Improvements Desired. Local interests have requested assistance in planning and constructing an enlarged channel to reduce flooding within the city and its environs.

PROJECT FORMULATION

19. Basic Considerations. The main problem in the Turkey Creek watershed is concerned with flood damage prevention. Discussed herein are the factors considered in developing the most economically feasible plan for reducing flood damages. Consideration was given to all tangible and intangible benefits that would result from both corrective and preventive measures as well as the costs associated with providing these measures. Corrective measures include reservoirs, levees, and channel improvements. Preventive measures include flood plain zoning, building codes, subdivision regulations, all of which would have to be implemented by the local community.

TABLE 2

AVERAGE MONTHLY & ANNUAL PRECIPITATION DATA
SUMTER, SOUTH CAROLINA

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1931	1.86	1.39	1.49	3.19	4.03	1.74	7.21	3.78	.20	.98	.12	4.54	31.53
1932	3.06	3.85	3.43	1.98	3.85	8.63	3.62	8.63	3.77	5.66	2.71	4.02	53.21
1933	2.26	4.80	1.58	1.24	3.28	3.12	2.68	2.44	4.95	.24	.46	.06	27.11
1934	.94	3.81	1.79	3.56	4.49	3.35	4.13	4.20	2.14	.79	2.36	1.83	33.39
1935	1.96	2.03	2.06	2.15	1.68	1.10	7.91	5.52	6.95	.76	1.97	2.55	36.94
1936	4.72	4.11	4.36	8.35	.18	3.38	3.10	3.94	4.10	4.26	1.53	4.43	46.46
1937	5.42	3.97	2.98	6.32	1.22	4.09	2.48	5.91	2.99	1.36	3.45	3.05	44.24
1938	.76	.56	1.20	8.73	4.40	8.86	6.47	1.63	6.81	1.72	2.24	2.29	45.26
1939	2.42	8.16	2.59	2.56	3.58	3.28	3.69	10.00	2.52	2.84	1.00	2.49	44.73
1940	3.08	4.39	2.	1.97	2.58	2.54	1.31	6.88	2.17	.13	3.76	1.35	32.79
1941	1.87	1.80	4.22	1.80	.48	11.71	9.67	4.54	.69	1.28	.64	9.25	47.95
1942	2.67	3.10	9.58	2.23	4.32	5.70	10.86	5.17	2.18	.46	1.12	3.98	51.41
1943	3.15	1.30	5.59	3.06	1.63	3.12	6.51	3.27	3.98	.35	1.94	4.53	38.41
1944	3.73	4.58	.88	4.92	1.97	.82	5.81	1.28	4.18	4.27	1.89	1.10	42.42
1945	1.97	3.41	.25	3.10	4.39	3.38	8.55	6.77	18.02	1.96	1.57	7.28	62.65
1946	2.30	2.46	2.99	3.66	3.75	2.09	7.57	9.63	1.49	5.63	4.73	1.32	47.62
1947	3.37	.42	5.24	7.35	3.81	2.69	5.29	4.88	6.37	4.00	8.55	4.46	56.83
1948	3.52	5.22	7.12	2.57	5.45	2.84	5.63	4.37	5.27	4.93	7.21	3.74	57.87
1949	.85	4.85	1.64	4.03	3.06	2.34	6.53	8.05	2.74	1.42	2.98	1.75	40.54
1950	2.49	.84	4.41	.85	3.39	3.12	9.25	3.33	5.08	2.75	1.11	4.82	41.44
1951	.92	.65	5.29	3.32	.22	3.20	3.48	2.95	2.11	.45	2.08	3.15	32.82
1952	2.99	4.41	6.29	4.08	5.87	2.28	2.42	14.29	3.08	.68	1.65	3.00	51.04
1953	1.99	5.07	3.62	1.66	3.73	4.45	1.32	5.72	5.64	.97	1.72	7.09	42.45
1954	2.04	.46	E .71	4.48	2.71	8.72	1.41	2.23	.60	.4	.89	2.32	31.02
1955	4.56	1.90	.79	3.13	E 3.07	4.41	4.35	3.71	1.82	2.35	1.77	E .76	33.50
1956	.57	6.31	3.60	2.51	.76	6.39	3.84	6.12	4.59	3.68	.81	E 2.98	43.16
1957	1.79	2.47	4.35	1.91	6.95	5.67	2.49	5.69	4.83	2.41	5.26	2.22	46.06
1958	4.14	3.88	4.66	8.61	3.71	7.04	7.10	2.97	2.83	2.69	.25	2.17	50.05
1959	2.61	5.02	5.83	3.01	9.57	2.36	12.82	5.07	10.92	8.87	.95	3.65	70.69
1960	5.45	7.54	3.83	3.08	1.77	2.58	7.34	5.13	4.91	1.48	1.89	2.13	47.81
1961	1.90	3.53	3.74	10.18	4.06	6.92	7.78	12.89	1.97	1.08	2.28	1.83	57.66
1962	4.88	4.13	4.47	3.91	2.47	9.13	3.14	3.47	4.57	1.48	5.84	2.39	49.78
1963	7.40	3.32	2.90	2.36	1.74	5.02	3.97	1.66	7.15	.13	5.09	2.59	41.33
1964	7.84	6.29	6.63	3.34	2.22	4.10	9.56	10.26	3.72	9.48	1.14	3.13	67.71
1965	1.07	5.76	7.92	3.34	2.69	12.83	8.08	5.45	1.52	1.74	1.96	.65	53.01
1966	7.27	3.12	4.96	2.80	5.39	5.39	5.93	4.18	3.97	1.23	.75	3.06	48.00
1967	3.43	3.10	2.19	2.08	5.66	2.88	4.00	4.96	2.17	.49	3.09	2.54	36.59
AVERAGE	3.05	3.56	4.01	3.73	3.34	4.62	5.65	5.42	4.24	2.36	2.46	3.09	45.48

E = Amount is wholly or partially estimated.

TABLE 2

AVERAGE MONTHLY & ANNUAL PRECIPITATION DATA
SUMTER, SOUTH CAROLINA

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1931	.86	1.39	1.49	3.19	4.03	1.74	7.21	3.78	.20	.98	.12	4.54	31.53
1932	3.06	3.85	3.43	1.98	3.85	8.63	3.62	8.63	3.47	5.66	2.71	4.02	53.21
1933	2.26	4.80	1.58	1.24	3.28	3.12	2.68	2.44	4.95	.24	.46	.06	27.11
1934	.94	3.81	1.79	3.56	4.49	3.35	4.13	4.20	2.14	.79	2.36	1.83	33.39
1935	1.96	2.03	2.06	2.45	1.68	1.10	7.91	5.52	6.95	.76	1.97	2.55	36.94
1936	4.72	4.11	4.36	8.35	.18	3.38	3.10	3.94	4.10	4.26	1.53	4.43	46.46
1937	5.67	3.97	2.98	6.32	1.22	4.09	2.48	5.91	3.99	1.36	3.45	3.05	44.24
1938	.70	.56	1.20	8.77	4.40	8.86	6.47	1.63	6.81	1.72	2.24	2.29	45.26
1939	2.42	8.16	2.59	2.56	3.58	3.28	3.69	10.00	2.52	2.84	1.00	2.49	44.73
1940	3.08	4.39	2.	1.97	2.58	2.54	1.31	6.88	2.17	.13	3.76	1.35	32.79
1941	1.87	1.80	4.22	1.80	.48	11.71	5.64	4.54	.69	1.28	.64	9.25	47.92
1942	2.67	3.10	9.58	2.27	4.32	5.70	10.88	5.17	2.18	.46	1.12	3.98	51.41
1943	3.15	1.30	5.59	3.06	1.63	3.12	6.51	3.27	3.98	.35	1.94	4.53	38.41
1944	3.72	4.58	3.38	4.92	1.97	.82	5.81	1.28	4.18	4.27	1.89	1.10	42.42
1945	1.97	3.41	.25	2.10	4.39	3.38	8.55	6.77	18.02	1.96	1.57	7.28	62.65
1946	2.30	2.46	2.99	3.66	3.75	2.09	7.57	9.63	1.49	5.63	4.73	1.32	47.62
1947	3.37	.42	5.24	7.35	3.81	2.69	5.29	4.88	6.37	4.00	8.55	4.46	56.43
1948	3.52	5.22	7.12	2.57	5.45	2.84	5.63	4.37	5.27	4.93	7.21	3.74	57.87
1949	.85	4.85	3.94	4.03	3.06	2.34	6.53	8.05	2.74	1.42	2.98	1.75	40.54
1950	2.49	.84	4.41	.85	3.39	3.12	9.25	3.43	5.08	2.75	1.11	4.82	41.44
1951	.92	.65	5.29	3.22	.22	3.20	5.48	2.95	3.11	.45	2.08	3.15	32.82
1952	2.99	4.41	6.29	4.08	5.87	2.28	2.42	14.29	3.08	.68	1.65	3.00	51.04
1953	1.99	5.07	3.62	1.66	3.73	4.45	1.32	5.72	5.64	.97	1.72	7.09	42.45
1954	2.04	.46	5.71	4.48	2.71	8.72	1.41	2.23	.60	4.	.89	2.32	31.02
1955	4.59	1.90	1.79	3.13	E 3.07	4.41	4.35	3.71	1.82	2.35	1.77	E .76	33.50
195	.57	6.31	3.60	2.51	.76	6.39	3.84	6.12	4.59	3.68	.81	E 2.98	43.16
19 7	1.79	2.47	4.35	1.91	6.95	5.67	2.49	5.69	4.83	2.41	5.26	2.22	46.06
19 8	4.14	3.88	4.76	8.61	3.71	7.04	7.10	2.97	2.83	2.69	.25	2.17	50.05
1959	2.61	5.02	5.83	3.01	9.57	2.36	12.82	5.07	10.99	8.87	.95	3.65	70.69
1960	5.45	7.54	3.83	3.08	1.77	2.58	7.34	5.13	4.91	1.48	1.89	2.13	47.81
196	3.90	3.53	3.74	10.18	4.06	6.92	7.78	12.89	1.97	1.08	2.28	1.83	57.66
1962	4.88	4.13	4.42	3.91	2.47	9.13	3.14	3.47	4.57	1.48	5.84	2.39	49.78
1963	3.40	3.32	2.90	2.36	1.74	5.02	3.97	1.66	7.15	.13	5.09	2.59	41.33
1964	7.84	6.29	6.63	3.34	2.22	4.10	9.56	10.26	3.72	9.48	1.14	3.13	67.71
196	1.07	5.76	7.92	3.34	2.69	12.83	8.08	5.45	1.52	1.74	1.96	.65	53.01
1966	7.21	3.12	4.96	2.80	5.39	5.39	5.93	4.18	3.97	1.23	.75	3.06	48.00
1967	3.43	3.10	2.19	2.08	5.66	2.88	4.00	4.96	2.17	.49	3.09	2.54	36.59
AVERAGE	3.05	3.56	4.01	3.73	3.34	4.62	5.65	5.42	4.24	2.36	2.46	3.09	45.48

E = Amount is wholly or partially estimated.

Plates 4 through 10. Additional information and/or interpretation of data will be provided by the Corps on request from local interests under the Flood Plain Management Services Program. The city and county are interested in the flood plain management approach and have requested additional management studies on other streams in the metropolitan area.

22. Plan of Improvement. The proposed plan of improvement (Scheme 1) provides for channel enlargement of Turkey Creek from the Pocotaligo River upstream to station 240+00 and for the implementation of flood plain management measures by the local community. The improved channel will have a length of 4.5 miles with bottom width varying from 60 feet at the outlet to 18 feet at station 240+00. Required right-of-way will vary from 200 feet in the lower reach to 100 feet in the upper reach. Culverts and bridges will be modified or reconstructed to provide sufficient capacity for proper functioning of the designed channel. Plates 3 through 10 show pertinent features and data for the improved channel. The channel will provide protection mainly against the smaller, more frequent floods. Plates 3 through 10 provide technical information regarding the Intermediate Regional Flood which the local community can use in developing measures to insure proper development of the flood plain. The flood plain management measures will prevent encroachment upon the flood control channel as well as providing flood protection against the larger floods.

a. The selected plan of improvement (Scheme 1) is based on a designed channel that will pass the 10-year flood at a 6-foot depth of flow. This criteria will allow the 25-year flood to pass at bankfull from station 95+00 to station 240+00. The 25-year flood will flow out of bank below station 95+00 but there is no development or damage occurring in this area. The flood plain below station 95+00 is well defined. It has flat overbanks several hundred feet wide with the land rising rapidly at the limits of the flood plain. This portion of the flood plain is presently subject to very frequent flooding. A high level of protection for this area is not necessary. Two channel cross sections are shown on Plate 3A.

b. Spoil Treatment. Spoil will be placed along the channel maintaining the berm widths as shown by the cross sections on Plate 3. Ample breaks will be left in the spoil banks to avoid ponding water back of the banks. The spoil banks and berms will be shaped and seeded to reduce erosion and to beautify the area. Agricultural lime and fertilizer will be applied prior to planting a suitable grass.

c. No special treatment is considered necessary at the intersection of tributaries. The planned improvement will require only minor lowering of the existing channel bottom. The tributaries will continue to intersect on grade, therefore no significant erosion problem will be created.

HYDROLOGY AND DESIGN

23. Runoff Records. There are no flow records available for Turkey Creek.

24. Storms and Floods. Severe storms in the general vicinity of Sumter usually occur during June, July, August, and September. Tropical storms and local thunderstorms have produced very intense rainfall. Brief statements of three storms are as follows:

a. 17 September 1945 - The September tropical storm extended from Florida to Pennsylvania and covered all of South Carolina and most of North Carolina. The major center of the storm occurred at Rockingham, North Carolina where 14.8 inches of rainfall was recorded in about 108 hours. Locally the storm dumped 1.4 inches of rainfall at Sumter on 16 September and followed with 8.68 inches on the 17th, resulting in widespread flooding. The storm produced the second flood of record on the Black River at Kingstree, S. C. The stream gaging record at Kingstree includes the period 1893 to date. Pocotaligo River is a tributary of Black River and Kingstree is located about 15 miles downstream from the mouth of the Pocotaligo River.

b. 18 June 1954 - Sumter was the center of a local rainstorm which produced 1.20 inches on 17 June and 6.96 on 18 June. Widespread flooding occurred along Turkey Creek. Sumter also sustained damage from lightning.

c. Flood of 30 September 1959 - Tropical storm, GRACIE, entered the South Carolina coastline about 11:30 a.m. on 29 September near Beaufort with winds exceeding 100 miles per hour. The center of the storm passed about 50 miles west of Sumter, traveling northward. Record rainfall at Sumter was 8.03 inches on September 30. There was moderate to heavy flooding from streams in many sections of eastern, southern, and central South Carolina.

TABLE 4

DAILY RAINFALL EXCEEDING 2.99 INCHES
SUMTER, SOUTH CAROLINA
1931-1967

DATE	PRECIPITATION (inches)	DATE	PRECIPITATION (inches)
5 August 1932	4.53	30 September 1959	8.04
26 February 1939	3.09	29 July 1960	3.02
23 July 1942	3.20	27 September 1962	3.40
20 October 1944	4.00	31 August 1964	4.35
17 September 1945	8.68	13 September 1964	3.30
5 August 1946	5.60	16 October 1964	3.27
8 October 1946	3.92	9 June 1965	3.65
31 August 1952	4.15	15 June 1965	3.00
18 June 1954	6.98	16 June 1965	3.26
16 April 1958	3.21	5 March 1966	3.04
10 May 1959	3.19		

25. Rainfall Frequencies. Weather Bureau Technical Paper No. 40 (Rainfall Frequency Atlas of the United States dated May 1961) was used to assign a frequency of occurrence to each of the 21 storms listed in Table 4. The resulting frequencies are shown in Table 5. From the values given, it is indicated that the 24-hour rainfall for the above storms would have a frequency of occurrence varying from less than 2 years to more than 100 years. The latter occurred in September 1945. Frequency of durations of 3 and 6 hours are also included in Table 5.

TABLE 5

RAINFALL FREQUENCY DURATIONS AT SUMTER

Frequency (years)	Duration (hours)	Rainfall (inches)
2	24	3.8
5	24	5.0
10	24	5.8
50	24	7.6
100	24	8.4
5	6	3.6
10	6	4.2
25	6	4.9
50	6	5.4
100	6	6.0
10	3	3.5
25	3	4.1
50	3	4.5
100	3	5.0

26. Unit Hydrographs. Two one-hour synthetic unit hydrographs were developed for Turkey Creek using procedures defined in Engineer Manual 1110-2-1405, Flood Hydrograph Analysis and Computations.

Unit hydrograph coefficients which were derived from small gaged drainage areas that would have similar runoff characteristics as Turkey Creek are not available. Consequently, the synthetic unit hydrographs were developed using generalized unit hydrograph relationships. Specifically, these relationships consisted of drainage area vs peak in c.f.s. per square mile; values of LLca/S½ vs lag (tp) in hours. The lag time, as obtained from the above relationship, was reduced in time by using the average velocities obtained from the backwater computations. The shorter lag time more nearly represents runoff characteristics prevailing for the area under study. The adopted unit hydrographs were developed using the above described procedure. Unit hydrograph basic data are given in Table 6 and the unit hydrograph coefficients given in the table were computed from the adopted unit hydrograph.

a. Infiltration rates. Infiltration rates selected were based on field observations which considered topography, soil types, vegatative cover, and urban development within the watershed. These rates were also discussed with the City Engineer of Sumter for adequacy.

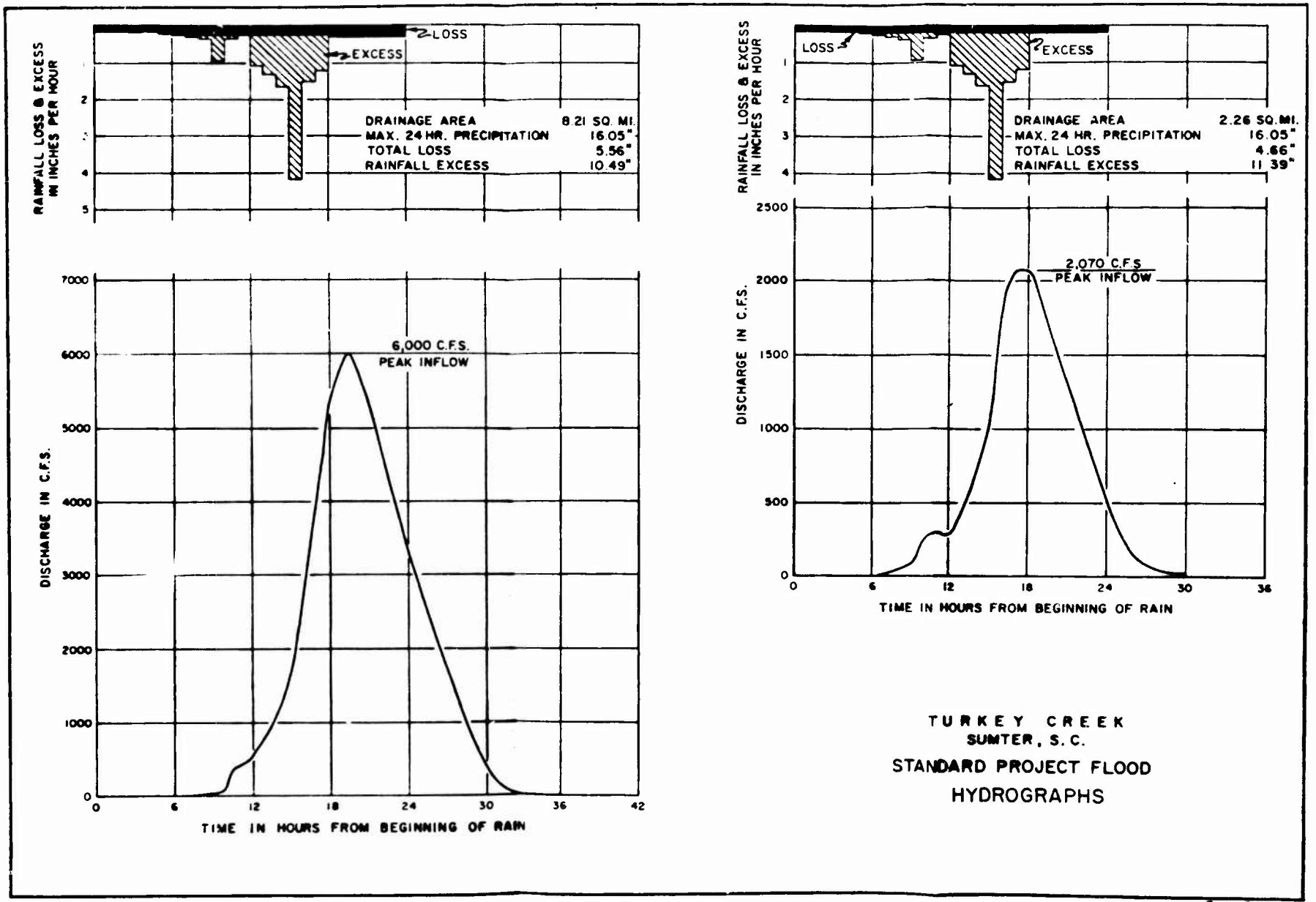
TABLE 6

TURKEY CREEK ONE HOUR SYNTHETIC UNIT HYDROGRAPH BASIC DATA

	Unit	Drainage Area 8.21 sq. mi.	Drainage Area 2.26 sq. mi.
L	Mile	5.6	1.71
Lca	Mile	2.3	0.71
$(LLca)^{0.3}$		2.15	1.06
qpF	CFS/Mi^2	85.26	115.0
QpR	C.F.S.	700	260
tpR	Hour	3.5	0.875
Ctr		1.63	0.825
Cp640		298	101
Base	Hour	17	11
Sst	Ft/Ft	0.00104	0.00163

27. Standard Project Flood. A standard project flood for Turkey Creek was developed from generalized estimates of rainfall and procedures outlined in Civil Engineer Bulletin No. 52-8. The storm thus developed has a duration of 96 hours and a total volume of rainfall of 19.31 inches. The maximum 24-hour rainfall of 16.05 inches was selected to estimate standard project floods on Turkey Creek. The above rainfall was distributed critically in 6-hour periods which resulted in 10.92 inches of rainfall occurring in the maximum 6-hour period. Each of the four 6-hour rainfall amounts were further distributed in one-hour periods. Rainfall excess amounts and total volume of runoff was determined by subtracting from the hourly rainfall amounts an hourly weighted infiltration rate of 0.2 inch and 0.25 inch for the upper and lower area of Turkey Creek, respectively. It was determined that the 48-hour antecedent rainfall satisfied initial losses. Rainfall excess amounts, so obtained, were applied to the one-hour unit hydrographs to obtain the standard project flood hydrograph for each area. The upper area has a peak of 2,070 c.f.s. and a volume of 1,373 acre-feet, equivalent to 11.39 inches of runoff from the 2.26 square mile drainage area; and the lower area of 8.21 square miles has a peak of 6,000 c.f.s. and a volume of 4,595 acre-feet which is equivalent to 10.49 inches of runoff. A standard project flood estimate for the headwater reach of Turkey Creek was considered necessary due to differences in configuration of the watershed, drainage pattern of the urban area, and runoff characteristics, when compared to similar features of the large area. Intermediate peak flows for the standard project flood were prorated using drainage area ratios. The hyetograph of the storm and the hydrographs are shown on Exhibit 1.

28. Flood Frequencies. Stream gaging data are not available for Turkey Creek. Therefore, flood frequencies were computed using Regional-Frequency Data for the North Carolina Coastal Plain furnished by the U. S. Army Engineer District, Wilmington, North Carolina. The Wilmington District studies were based on methods presented in Statistical Methods in Hydrology, dated January 1962 by Leo R. Beard. These procedures were



TURKEY CREEK
SUMTER, S.C.
STANDARD PROJECT FLOOD
HYDROGRAPHS

EXHIBIT - 1

used to compute discharge-frequency relationships for Turkey Creek at two locations. It was determined that the best-fit frequency curve resulted when using a skew coefficient of 1.00. Discharge-frequency values at other desired locations were prorated. Discharge frequency data are given in Table 7.

TABLE 7

FLOOD FREQUENCY DATA FOR TURKEY CREEK

Recurrence Interval (years)	At Hwy 521 8.26 Sq. Mi. (discharge cfs)	At Houser Street 2.26 Sq. Mi. (discharge cfs)
2	875	335
5	1,380	510
10	1,750	635
25	2,450	860
50	3,080	1,060
100	3,820	1,300
SPF	6,000	2,070

29. Flood Plain. Flood Plain delineation was determined from backwater computations. Water surface elevations were derived under existing conditions for 2, 5, 10, 50, 100 year frequency flows and Standard Project Flood. Backwater computations are based on 24 valley cross sections on Turkey Creek. Selected coefficients of "n" varied from 0.04 to 0.08 in the existing channel and from 0.07 to 0.20 in the overbank. Plate 2 shows water surface profiles for the 2, 10, 100 year discharges and Standard Project Flood. Plan views of the present 10 and 100 year flood plains are presented in Appendix A, Plates A-2 through A-8.

30. Design Discharge. The designed channel will carry a flood peak which has an excedence frequency of once in 25 years from station 95+00 to 240+00 indicated by backwater computations with the improved channel. Channel design profile is shown on Plate 3. The 25-year, 100-year, and Standard Project Flood profiles with the improved channel are also on Plate 3. Peak discharges for the 25-year frequency flood within the project limits are as follows:

Reach A	2,450 to 1,020 cfs
Reach B	930 to 780 cfs
Reach C	710 to 540 cfs

31. Channel Dimensions. Channel dimensions are based on backwater computations using procedures prescribed in EM 1110-1-1409. A coefficient of 0.035 ("N") was selected for the design of the channel. The designed channel has a depth of flow of six feet with bottom widths varying from 60 feet in the lower reach to 18 feet in the upper reach. Mean velocities range from 3.8 feet per second in Reach A to 3.5 feet per second in Reach C. Field studies indicate that soils are stable enough to withstand designed velocities. Side slope selection is based on soil conditions and existing channel sides. The existing channel has side slopes

of 1:1 or less and is stable. A side slope of 2:1 was selected for the portion of the channel below Highway 521. Soils in this area are not as stable as those in the upper reaches. A table of channel dimensions is presented in Plate 3.

32. Effects of Recommended Channel Enlargement. The improved channel will result in reduced stages for all floods. The proposed channel (Scheme 1) is designed to carry a 10-year flood at a 6-foot depth of flow. The 25-year flood will pass near or below low banks, as determined from backwater computations, from station 95+00 to 240+00 as shown on Plate 3. Blockage of the channel is not a threat in the damage reaches. Flood plain area inundated below station 95+00 has no development and is not suitable for development. Out of bank flow from the 100-year flood with the improved channel (Scheme 1) ranges from 17 to 767 cfs averaging 110 cfs. Out-of-bank flow velocity ranges from .04 to 1.0 foot per second and averages about 0.3 foot per second. Areas inundated by the 100-year flood have an average depth of about 1.0 foot. Stage-discharge curves for existing and improved conditions are presented on Exhibits A-2, A-3, and A-4. Table 8 gives a frequency analysis of protection.

TABLE 8

ANALYSIS OF PROTECTION

Reach & Classification	Non-Damaging Floods w/Existing Conditions (Frequency in Years)	Non-Damaging Floods with Scheme 1 Channel Improvement (Frequency in Years)
Reach A		
Residential	3	No damage w/100-Yr Flood
Public Properties	3	No damage w/100-Yr Flood
Reach B		
Residential	3	40
Business	3	40
Public Properties	3	40
Reach C		
Residential	9	43
Business	7	40
Public Properties	4	30

PROJECT COSTS

33. Total Estimated Project Cost. All cost estimates are based on experience derived from previous projects. Unit prices are based on the latest available in the study area. Allowance was made for contingencies, engineering and design, and supervision and administration. The total construction cost is estimated to be $175,300 and the total project cost is $248,800. Table 9 presents a summary of project costs. Bridge removal included under construction costs is for demolition of an abandoned bridge below Highway 521. The Seaboard-Coast Line Railroad culvert at station 223+35 will require 64 square feet more opening. Estimated cost of installing an additional 8' x 8' box culvert including contingencies, engineering, design, and supervision is $26,000. Bridge changes under land, bridge and utilities costs are for modification at East Calhoun Street, Boulevard Road, Houser Street, and Fulton Street.

TABLE 9

ESTIMATED PROJECT COSTS

Construction Costs		
Channel Excavation 232,100 cu. yds. @ $.26/cu. yd.	$60,300	
Land Clearing (90.17 total acres) 90.17 ac. @ $350/ac.	31,600	
Spoil Shaping & Seeding 63.0 acres @ $200/ac.	12,600	
Bridge Removal	800	
Tree Pruning & Painting	1,000	
Subtotal		$106,300
Contingencies	15,900	
Subtotal		122,200
Engineering & Design	18,300	
Supervision & Administration	8,800	
R. R. Culvert Modification	26,000	
Total Construction Cost		$175,300
Land, Bridges & Utilities Costs		
Right-of-way (90.17 ac. total)		
0+00 to 33+50 - 15.38 ac. @ $100/ac.	1,500	
33+50 to 124+40 - 41.19 ac. @ $200/ac.	8,200	
124+40 to 201+50 - 24.78 ac. @ $800/ac.	19,800	
201+50 to 240+00 - 8.82 ac. @ $2,000/ac.	17,600	

TABLE 9 (Cont'd)

Land, Bridges & Utilities Costs (Cont'd)

Bridge Changes			
Fulton Street (New Bridge)	$5,000		
Houser Street (New Bridge)	5,000		
Boulevard Rd. (Modification)	3,500		
East Calhoun Street (additional box culvert)	7,200		
		$20,700	
Utilities		3,200	
Engineering & Legal		2,500	
Total Land, Bridges, etc.			$73,500
TOTAL PROJECT COSTS			$248,800

ANNUAL CHARGES

34. Total average annual charges are estimated to be $17,300 of which $2,300 is for annual maintenance. Amortization is based on a project life of 50 years with an interest rate of 4-5/8percent. Annual charges are summarized in Table 10.

TABLE 10

ESTIMATED AVERAGE ANNUAL PROJECT CHARGES

Total Project Costs ($248,800) Amortized over 50 years at 4-5/8% interest (Factor .060148)	$15,000
Maintenance - 4.54 miles @ $500/mile	2,300
TOTAL AVERAGE ANNUAL CHARGES	$17,300

ANNUAL BENEFITS

35. Average Annual Benefits. Average annual benefits resulting from the selected plan of improvement are shown in Table 11. A detailed explanation of benefits is given in Appendix A. The average annual benefits are $52,000.

TABLE 11

SUMMARY OF AVERAGE ANNUAL BENEFITS

Reach & Classification	Annual Benefits From Existing Development
Reach A	
Residential	400
Public Properties	800
Reach B	
Residential	300
Business	7,600
Public Properties	2,400
Reach C	
Residential	3,100
Business	14,900
Public Properties	2,500
TOTAL	32,000

36. Benefit-to-Cost Ratio. Average annual benefits are $32,000 and annual costs $17,300. The ratio of benefits to cost is 1.8.

37. Cost Allocation. All annual benefits result from reduction of flood damages to existing and future development. Therefore, all construction costs ($175,300) would be allocated to the United States. The expense of railroad bridge alteration will be assigned as a Federal cost. Costs of lands, easements, and rights-of-way, legal, street, and highway bridge replacement and alteration, utility relocations, and annual maintenance are to be borne by local interests.

COORDINATION WITH OTHER AGENCIES

38. Agencies interested in this project were requested to evaluate the effect of the project from their point of view. Their comments are presented in Appendix C.

LOCAL COOPERATION

39. The City of Sumter and Sumter County have given assurance of local cooperation as follows:

a. Provide, without cost to the United States, all lands, easements, rights-of-way, utility relocations and alterations, and highway bridge construction and alterations necessary for project construction.

b. Hold and save the United States free from damages due to the construction works, and adjust all claims concerning water rights.

c. Maintain and operate the project after completion, without cost to the United States, in accordance with regulations prescribed by the Secretary of the Army.

d. Prescribe and enforce regulations to prevent obstructions or encroachments on the channel and rights-of-way necessary to proper functioning of the project.

e. At least annually, notify affected interests that the improvement will not provide complete flood protection.

f. In the development of the flood plain areas, necessary preventive measures will be adopted to minimize the future flood damages in accordance with guidance and technical data provided in this report and under the Flood Plain Management Service program of the Corps of Engineers. (See Appendix B).

CONCLUSIONS

40. It is concluded that Federal assistance is warranted to alleviate the flooding problem and potential hazards which exist in the Turkey Creek watershed. The plan of improvement is confined to the main stem of Turkey Creek. Channel improvement was found to be the only feasible

plan. The proposed channel is designed to carry a 10-year flood and in most areas it will contain a 25-year flood within banks. Floods of greater magnitude will be reduced substantially in stage.

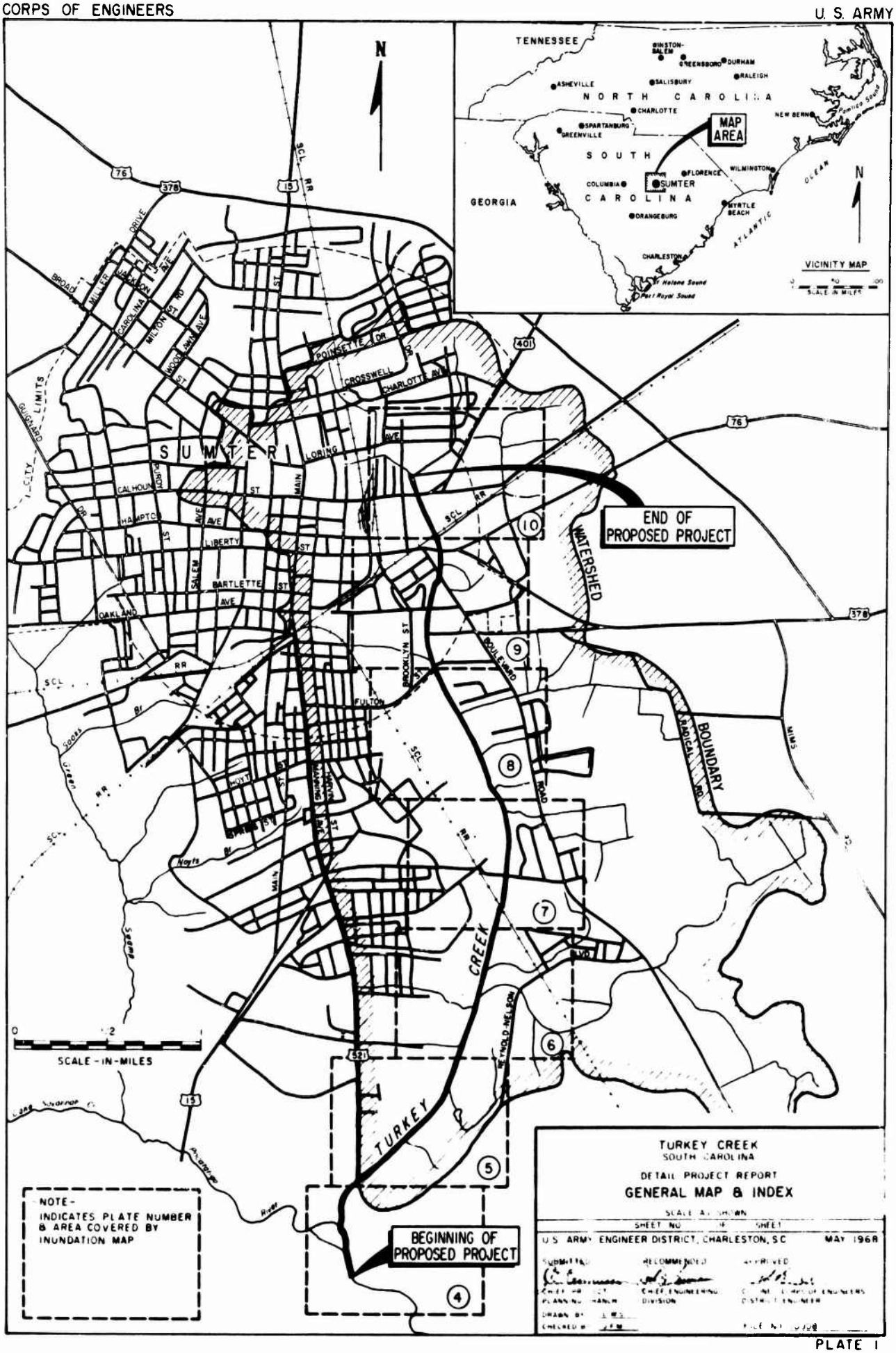
RECOMMENDATIONS

41. The District Engineer recommends that a channel improvement project be approved on Turkey Creek as contained herein under Section 205 of the 1948 Flood Control Act, as amended, and that $175,300 of Federal funds be allocated to construct this project subject to conditions of local cooperation as stated in paragraph 39 of this report. The improvements consist of channel enlargement on Turkey Creek from its outlet at the Pocotaligo River to a point 4.5 miles upstream as shown on Plates 1 and 3.

ROBERT E. RICH
Colonel, Corps of Engineers
District Engineer

CORPS OF ENGINEERS

U. S. ARMY

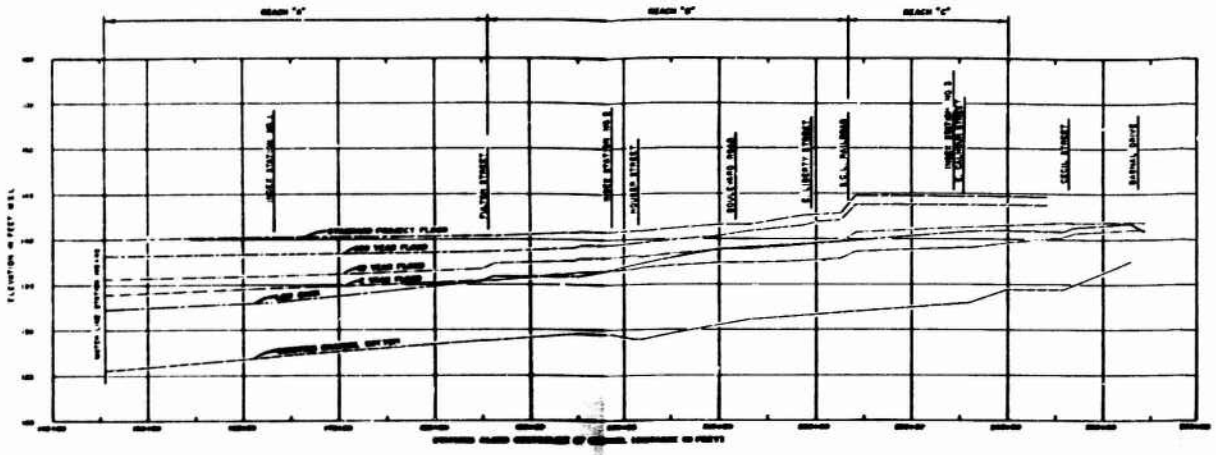


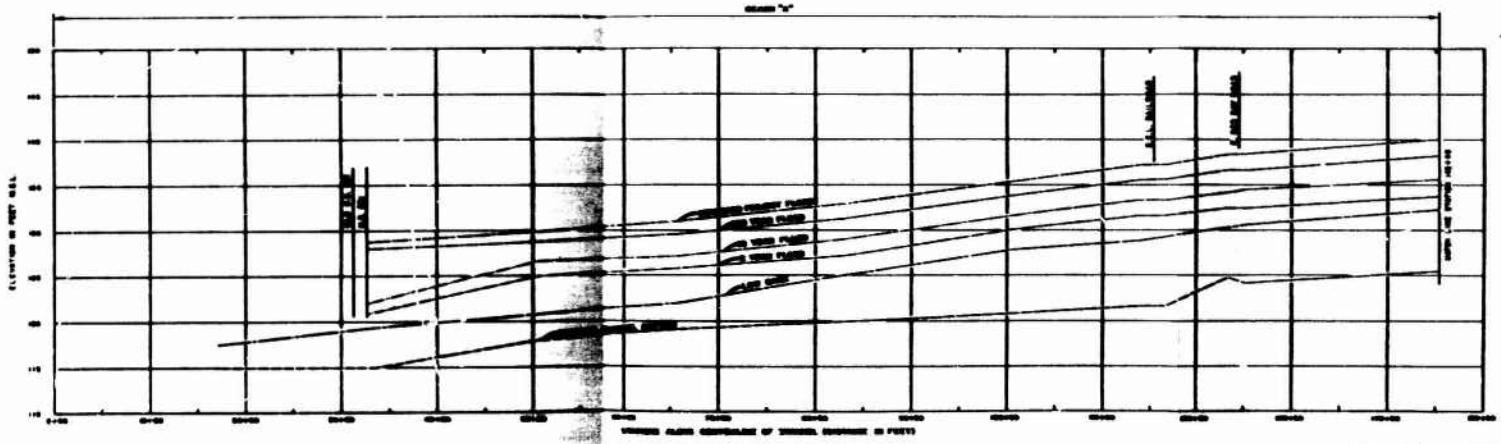
TURKEY CREEK
SOUTH CAROLINA
DETAIL PROJECT REPORT
GENERAL MAP & INDEX
SCALE AS SHOWN
SHEET NO. OF SHEET
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C. MAY 1968
SUBMITTED: CHIEF, PLANNING BRANCH
RECOMMENDED: CHIEF ENGINEERING DIVISION
APPROVED: DISTRICT ENGINEER
DRAWN BY:
CHECKED BY:
FILE NO.

PLATE 1

CORPS OF ENGINEERS

U.S. ARMY





TURKEY CREEK
SOUTH CAROLINA
DETAIL PROJECT REPORT
PROFILES—EXISTING CONDITIONS

U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C. MAY 1969

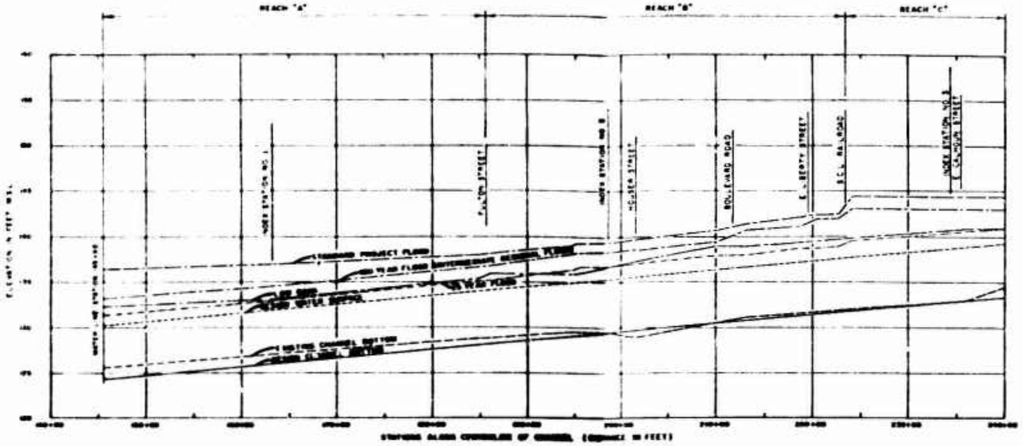
SUBMITTED: Chief, Project Planning Branch
RECOMMENDED: Chief, Engineering Division
APPROVED: Colonel, Corps of Engineers, District Engineer

DRAWN BY: J.L.A.
CHECKED BY: J.L.A.
FILE NO.

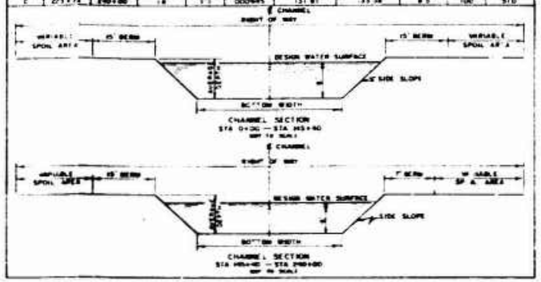
PLATE 2

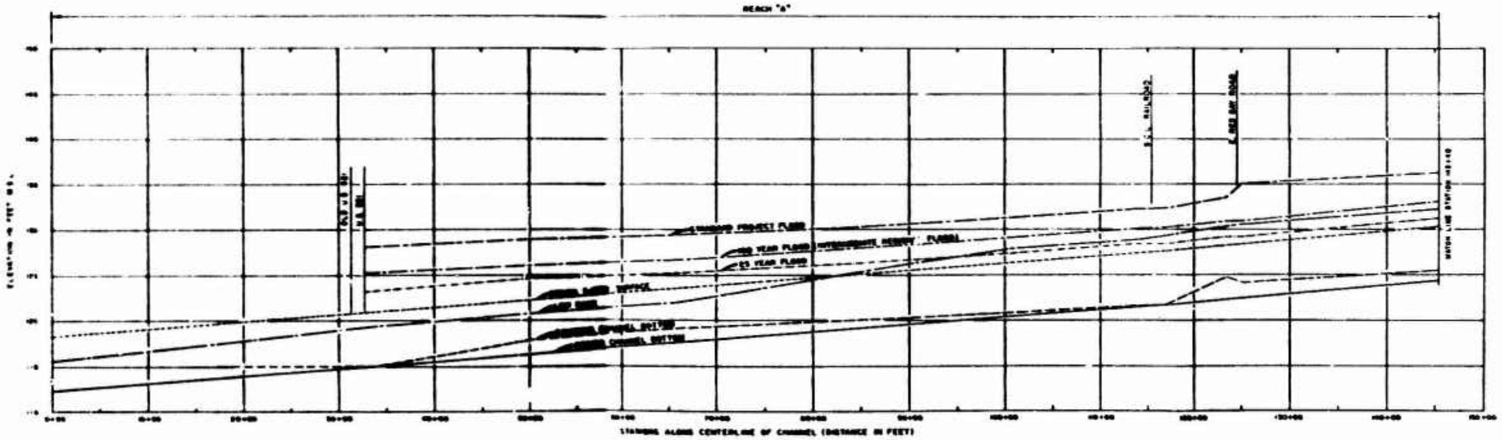
CORPS OF ENGINEERS

U.S. ARMY



CHANNEL DESIGN DATA										
REACH	BEGINNING STATION	ENDING STATION	BOTTOM WIDTH	SIDE SLOPE	BOTTOM SLOPE	ELEVATION BEGINNING OF REACH	ELEVATION END OF REACH	AVERAGE DEPTH OF CUT	RIGHT OF WAY	DISCHARGE C.F.S.
A	[illegible]	32+60	60	2:1	[illegible]	112.30	114.93	4.6	200	1750
A	[illegible]	50+50	60	[illegible]	[illegible]	114.93	116.38	4.6	200	1750
A	[illegible]	66+75	60	[illegible]	[illegible]	116.38	117.61	4.6	200	1570
A	[illegible]	83+00	60	[illegible]	[illegible]	117.61	119.00	5.4	200	1510
A	83+00	[illegible]	60	[illegible]	[illegible]	119.00	120.43	7.2	200	1380
A	[illegible]	113+40	55	[illegible]	[illegible]	120.43	121.62	7.3	200	[illegible]
A	[illegible]	[illegible]	45	[illegible]	.000945	121.62	122.47	8.3	175	1170
A	[illegible]	[illegible]	45	[illegible]	.000945	122.47	124.48	8.5	175	1100
A	[illegible]	[illegible]	40	[illegible]	.000945	124.48	126.15	7.5	150	980
A	[illegible]	[illegible]	35	[illegible]	.000945	126.15	128.24	7.5	120	900
B	[illegible]	194+80	30	[illegible]	[illegible]	128.24	129.10	8.5	120	740
B	[illegible]	201+50	28	[illegible]	[illegible]	129.10	129.75	8.1	100	680
B	[illegible]	211+30	24	[illegible]	[illegible]	129.75	130.69	9.0	100	635
C	[illegible]	219+50	22	[illegible]	.000945	130.69	131.45	8.1	100	580
C	[illegible]	[illegible]	20	[illegible]	[illegible]	131.45	[illegible]	9.0	100	530
C	[illegible]	240+00	18	[illegible]	.000945	[illegible]	[illegible]	8.5	100	510





TURKEY CREEK
SOUTH CAROLINA
DETAIL PROJECT REPORT
PROFILE — IMPROVED CHANNEL
SCALE AS SHOWN
SHEET 1 OF 1 SHEET

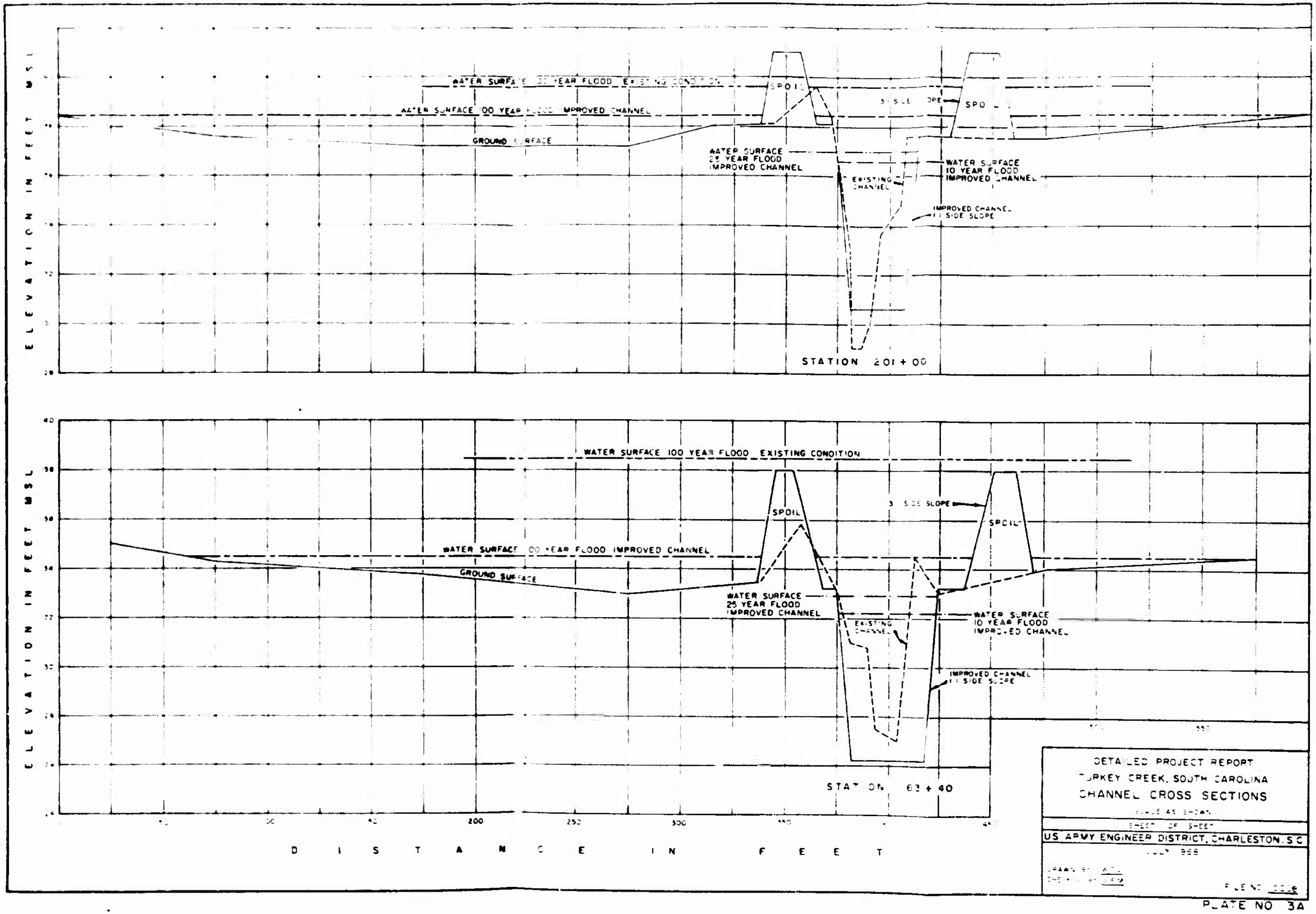
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C. — MAY 1968

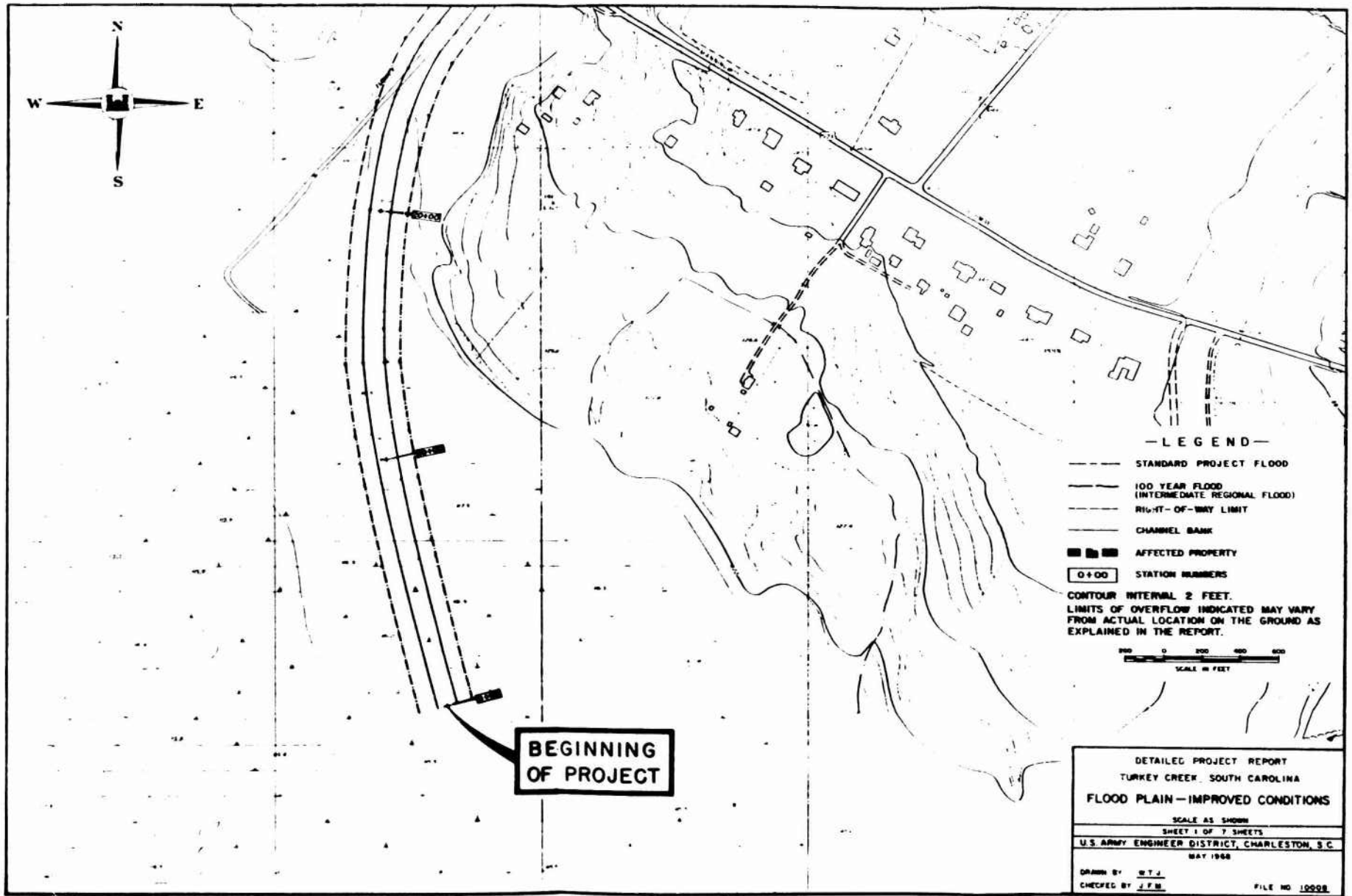
SUBMITTED — CHIEF, PROJECT PLANNING BRANCH
RECOMMENDED — CHIEF, ENGINEERING DIVISION
APPROVED — COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

DRAWN BY: [illegible]
CHECKED BY: [illegible]

FILE NO. 10008

PLATE 3


WATER SURFACE 100 YEAR FLOOD EXISTING CONDITION
WATER SURFACE 100 YEAR FLOOD IMPROVED CHANNEL
GROUND SURFACE
SPOIL
WATER SURFACE 25 YEAR FLOOD IMPROVED CHANNEL
EXISTING CHANNEL
WATER SURFACE 10 YEAR FLOOD IMPROVED CHANNEL
IMPROVED CHANNEL 1:1 SIDE SLOPE
3:1 SIDE SLOPE
STATION 201 + 00
STATION 63 + 40
ELEVATION IN FEET MSL
DISTANCE IN FEET
200
250
300
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
CHANNEL CROSS SECTIONS
US ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
PLATE NO 3A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100 YEAR FLOOD (INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
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CONTOUR INTERVAL 2 FEET.
LIMITS OF OVERFLOW INDICATED MAY VARY FROM ACTUAL LOCATION ON THE GROUND AS EXPLAINED IN THE REPORT.
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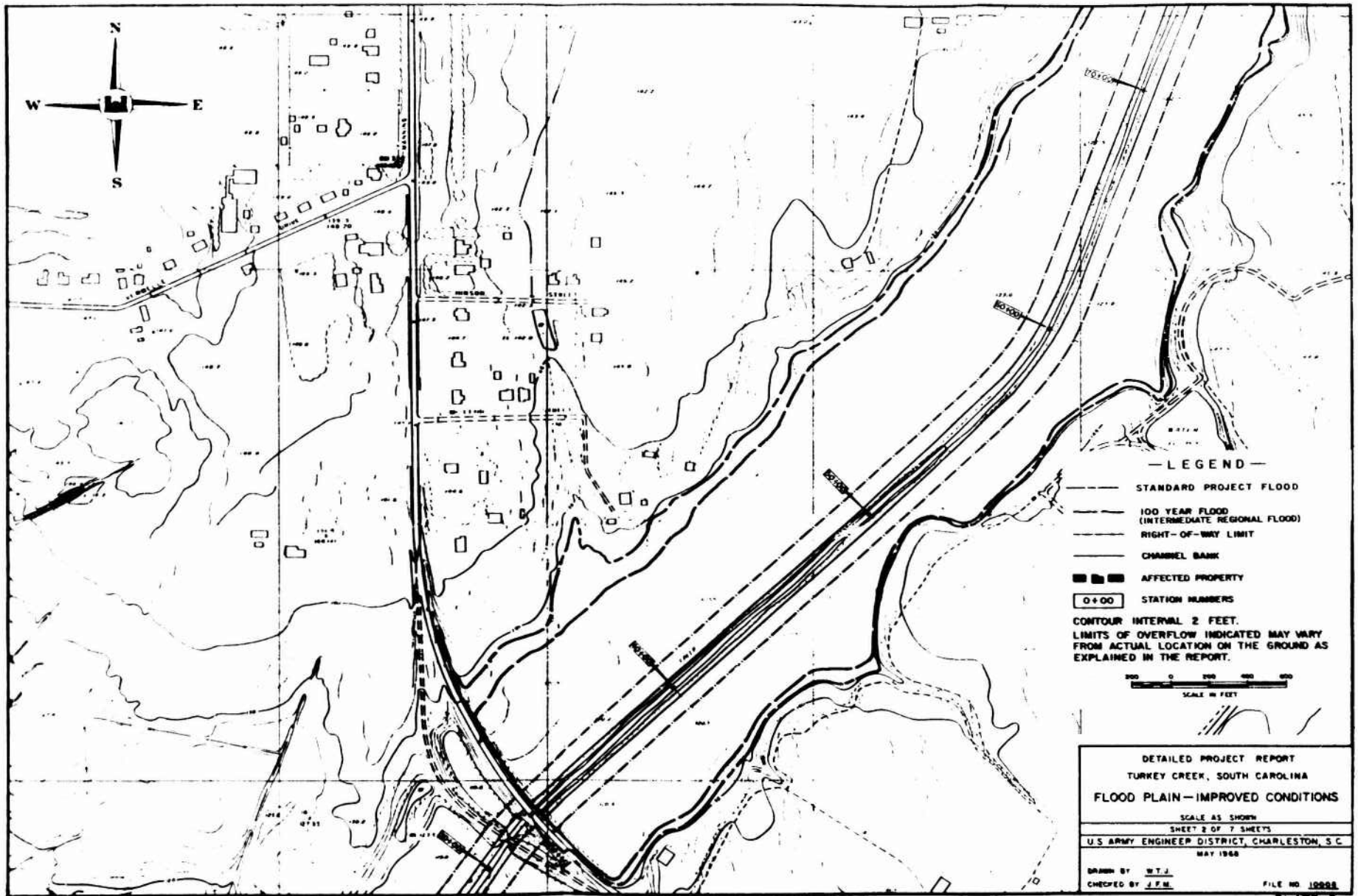
SCALE IN FEET
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
FLOOD PLAIN—IMPROVED CONDITIONS
SCALE AS SHOWN
SHEET 1 OF 7 SHEETS
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.T.J.
CHECKED BY J.F.M.
FILE NO. 10008

PLATE 4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100 YEAR FLOOD
(INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
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STATION NUMBERS
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FLOOD PLAIN—IMPROVED CONDITIONS
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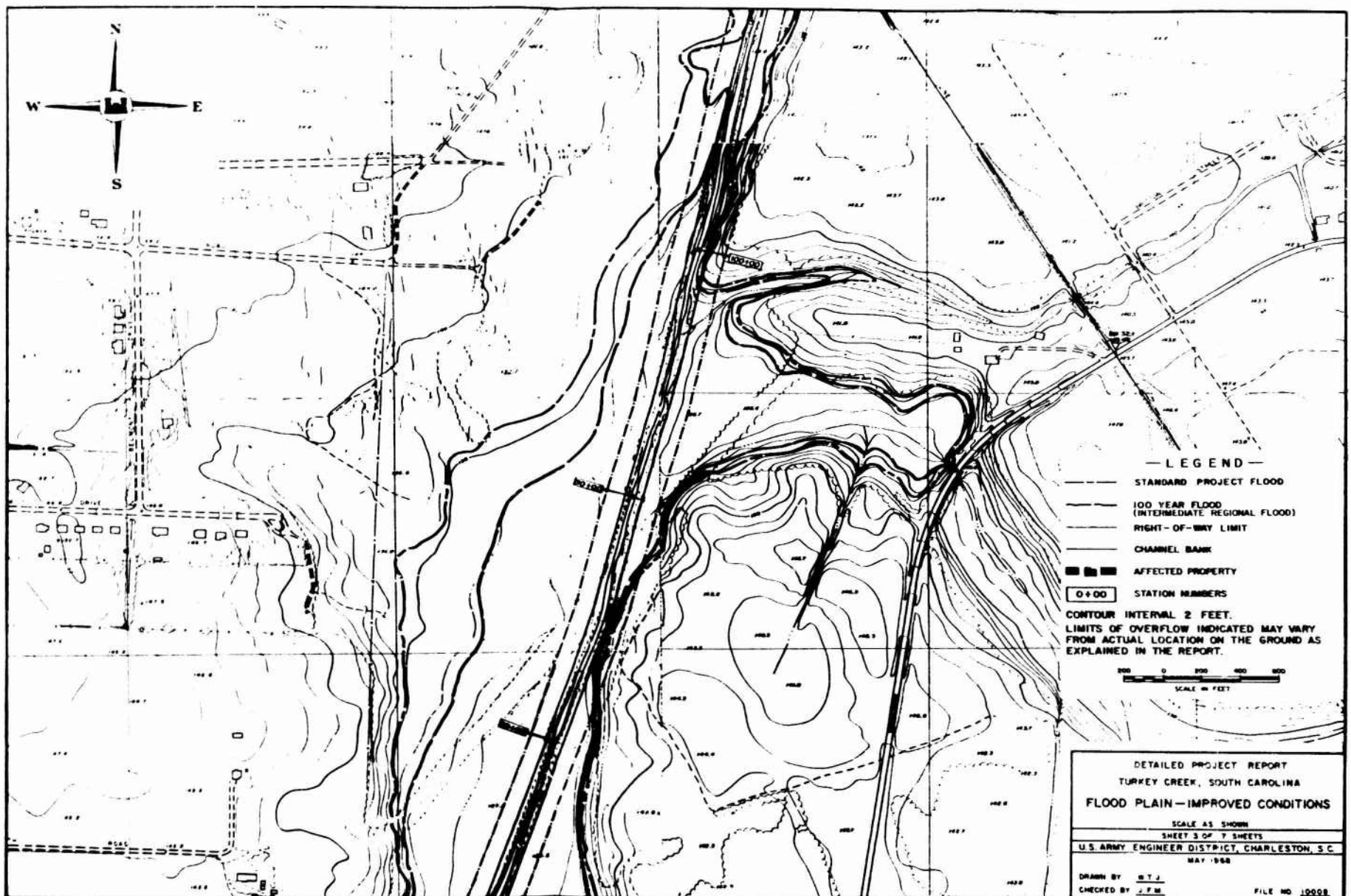
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.T.J.
CHECKED BY J.F.M.
FILE NO 10998

PLATE 5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100 YEAR FLOOD
(INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
0+00 STATION NUMBERS
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SCALE AS SHOWN
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U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
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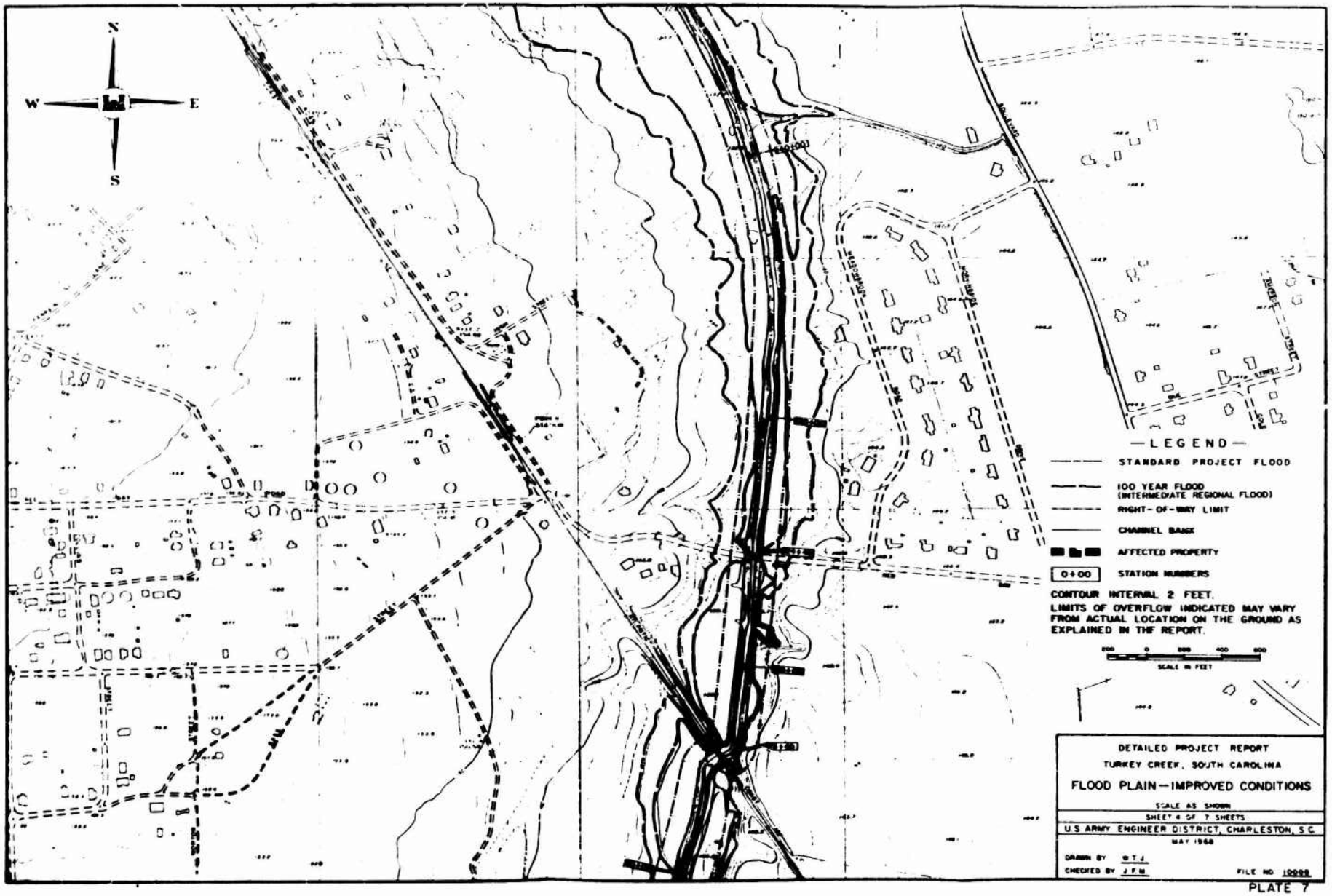
CHECKED BY J.F.M.
FILE NO. 10008

PLATE 6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RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
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FLOOD PLAIN—IMPROVED CONDITIONS
SCALE AS SHOWN
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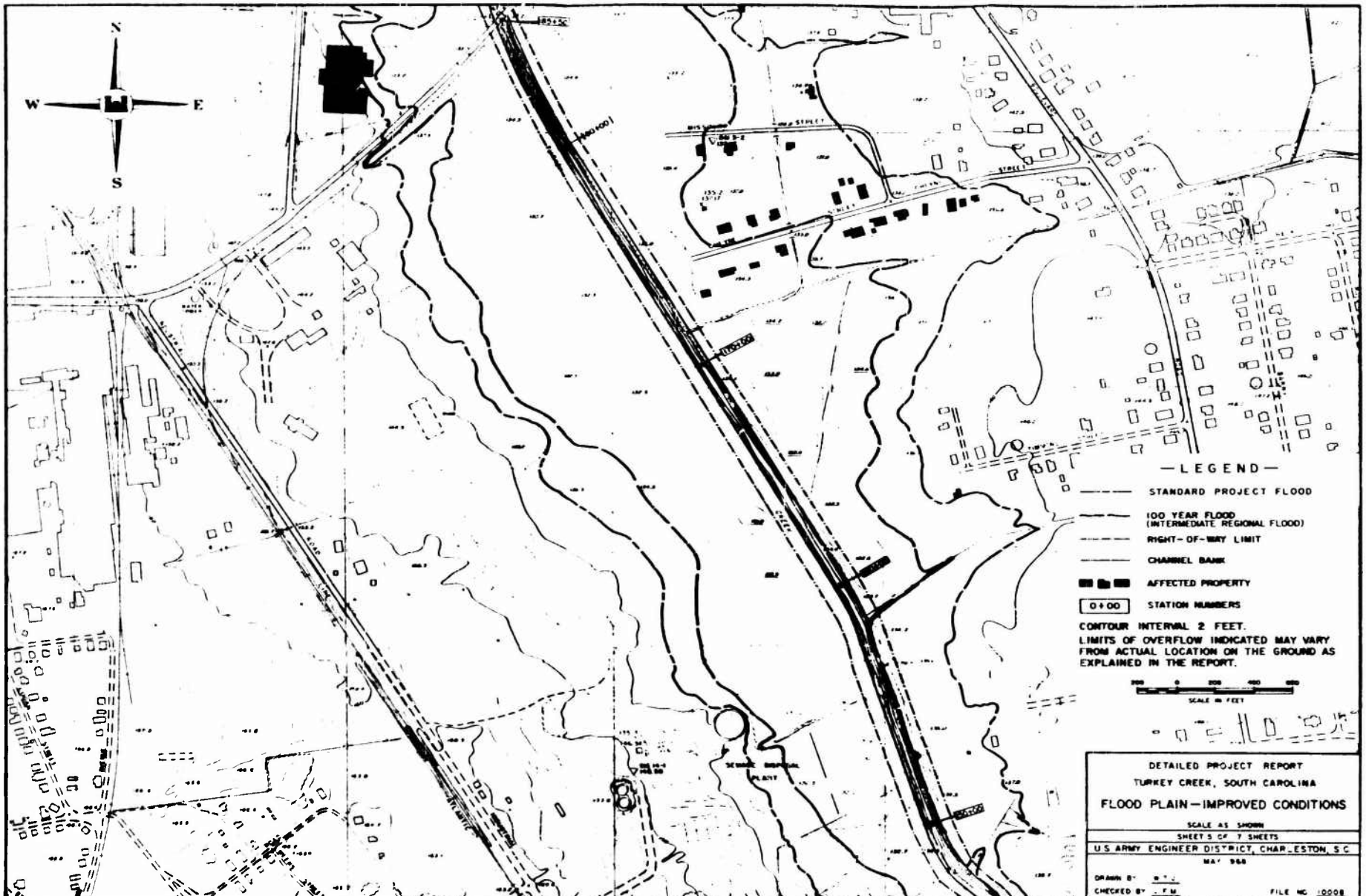
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.T.J.
CHECKED BY J.F.M.
FILE NO. 10998

PLATE 7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100 YEAR FLOOD
(INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
0+00 STATION NUMBERS
CONTOUR INTERVAL 2 FEET.
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SCALE IN FEET
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
FLOOD PLAIN—IMPROVED CONDITIONS
SCALE AS SHOWN
SHEET 5 OF 7 SHEETS
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 968
DRAWN BY: B.T.J.
CHECKED BY: J.F.M.
FILE NO. 10008

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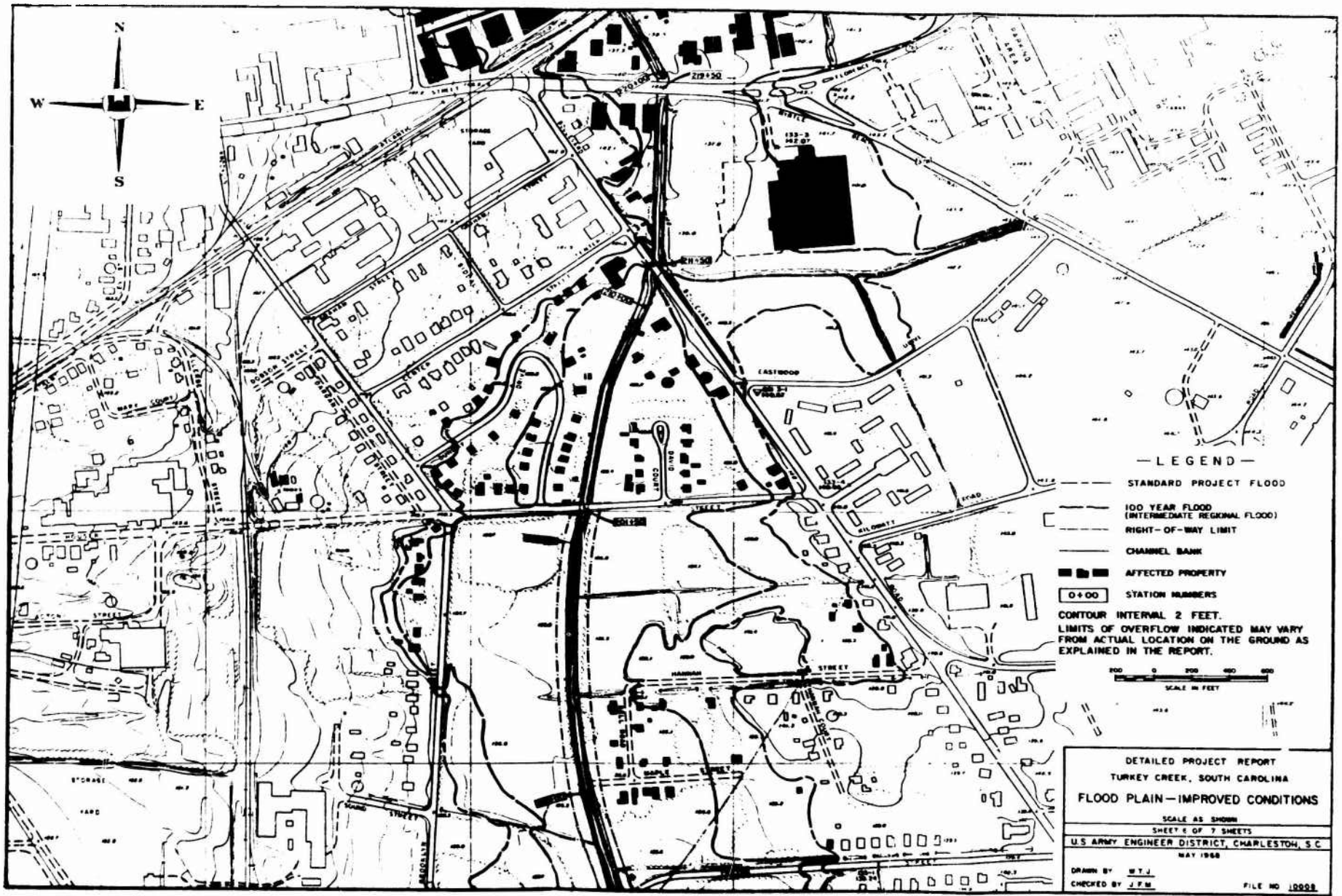
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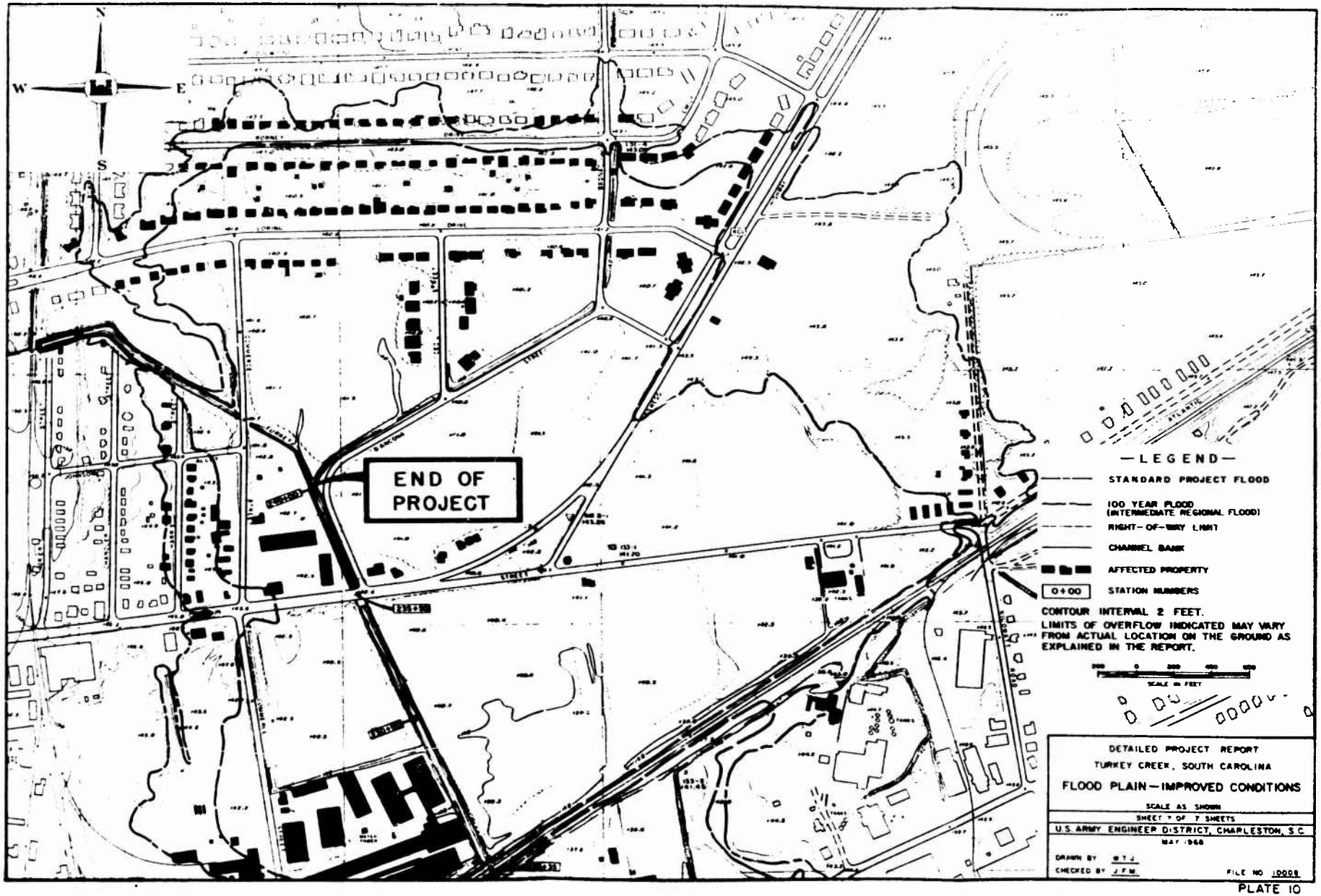
—LEGEND—
STANDARD PROJECT FLOOD
100 YEAR FLOOD
(INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
0+00 STATION NUMBERS
CONTOUR INTERVAL 2 FEET.
LIMITS OF OVERFLOW INDICATED MAY VARY FROM ACTUAL LOCATION ON THE GROUND AS EXPLAINED IN THE REPORT.
SCALE IN FEET
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
FLOOD PLAIN—IMPROVED CONDITIONS
SCALE AS SHOWN
SHEET 6 OF 7 SHEETS
U.S ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.T.J.
CHECKED BY J.F.M.
FILE NO 10998

PLATE 9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—LEGEND—
STANDARD PROJECT FLOOD
100 YEAR FLOOD (INTERMEDIATE REGIONAL FLOOD)
RIGHT-OF-WAY LIMIT
CHANNEL BANK
AFFECTED PROPERTY
0+00 STATION NUMBERS
CONTOUR INTERVAL 2 FEET.
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SCALE IN FEET
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
FLOOD PLAIN—IMPROVED CONDITIONS
SCALE AS SHOWN
SHEET 7 OF 7 SHEETS
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.T.J.
CHECKED BY J.F.M.
FILE NO. 10008

PLATE 10

DETAILED PROJECT REPORT

TURKEY CREEK, SOUTH CAROLINA

APPENDIX A

EVALUATION OF FLOOD DAMAGES AND BENEFITS

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS
CHARLESTON, SOUTH CAROLINA

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APPENDIX A

TABLES

PLATES

EXHIBITS

APPENDIX A

EVALUATION OF FLOOD DAMAGES

AND BENEFITS

1. General. This appendix presents estimates of flood damages occurring from floodwater along Turkey Creek as well as potential benefits to be expected from the proposed plan of improvement. Damage estimates are based on a detailed study of the flood plain. All damages and benefits are to urban properties since no land is being put to important agricultural use. Estimates are based on 1968 prices.

2. Existing Benefits. Benefits were determined by estimating average annual damages with and without the channel improvement. Flood damage estimates are based on flood elevations and flood plains determined by computer backwater computations using 24 valley cross-sections. Flood plains and water surface elevations were determined for the 2, 5, 10, 50, and 100 year frequency floods. Three index stations were selected that best represent average conditions. Frequency-discharge and stage-discharge curves were developed for each index station.

3. Flood damages to residential, business and public properties were estimated based on floodwater elevations. Residential damages were computed by applying the percent damage based on stage as shown in Exhibit A-5 times the value of the structure. Market value was estimated for each house in the flood plain with assistance from local realtors and city officials. Business damages were secured through interviews with individual owners or managers. It is their estimates of damages they would sustain from various floodwater elevations. Items considered were damage to buildings, equipment, stocks, and loss of income and wages. Public properties sustaining damages are roads, bridges, water and sewer lines, sewerage lift station, and a State Highway Maintenance Shop. Estimates of damages were obtained from the City Engineer and State Highway Department Resident Engineer.

4. Stage-damage curves were constructed for the three categories of benefits. Average annual damages were computed with existing development, Scheme 1 design, and Scheme 2 design. The stage-damage curves are for the Scheme 1 channel design presented in Exhibits 6, 7, and 8. Table A-1 summarizes damage to existing development with and without the proposed Scheme 1 channel design. The difference between damages before and those after the projects are the annual benefits.

5. The total value of residential, commercial, and industrial development in the 10 and 100-year flood plains is presented by reach in Table A-2. The acreage in each reach is also given.

6. Other Benefits. It is recognized that there will be some additional benefits derived from land enhancement and from protection of limited future development. These benefits are minor and will not effect project formularization or justification. Therefore, they were not studied in detail. Land enhancement will occur in the area between the 100-year flood plain limits under existing conditions and the 100-year flood plain limits with the selected plan of improvement. This area is narrow and already partially occupied with existing development. Damages to future development will be limited by the planned protective measures and the increased awareness of the flooding.

TABLE A-1

SUMMARY OF DAMAGES & BENEFITS
TO EXISTING DEVELOPMENT

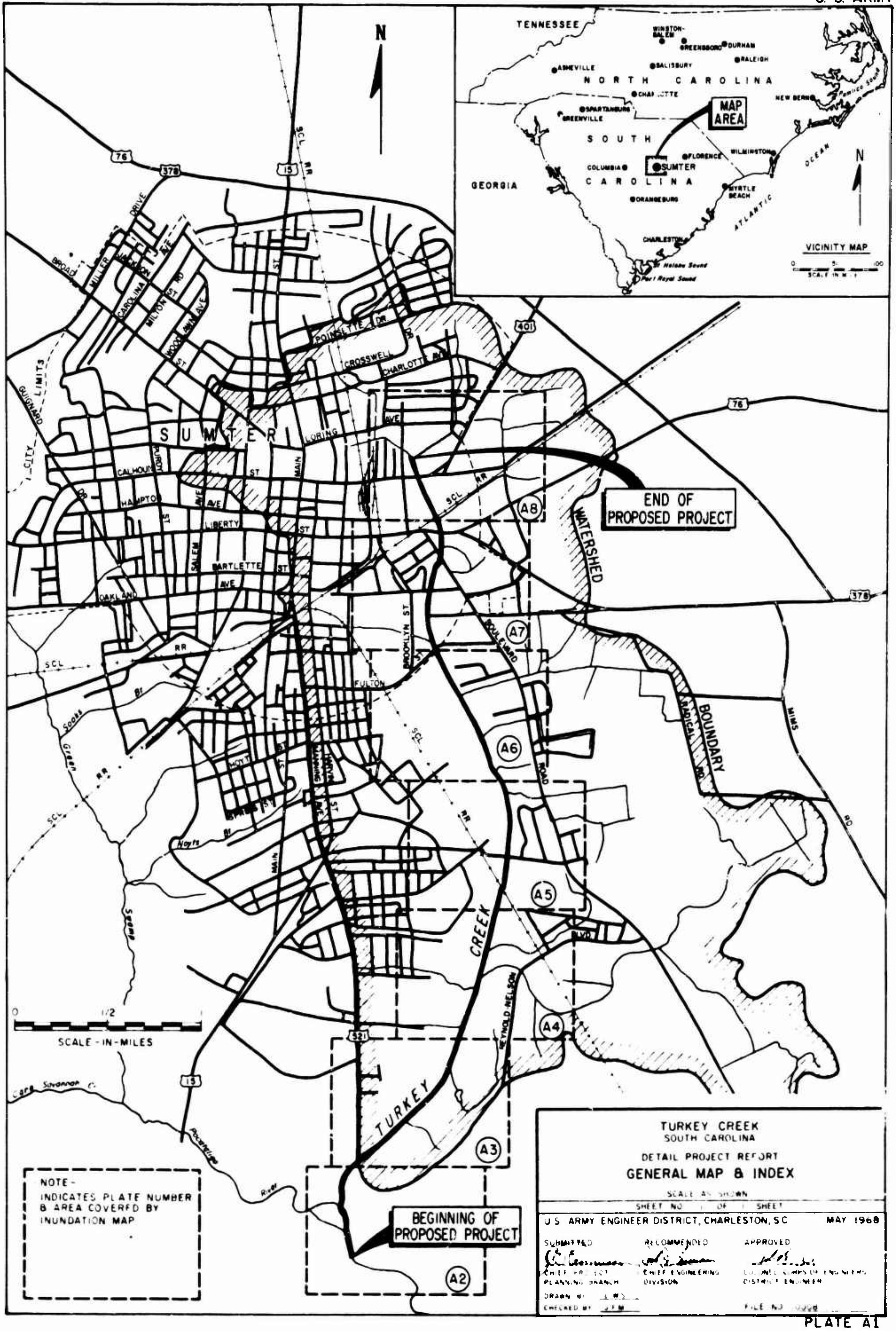
Reaches Classification of Damages	Annual Damages	Frequency Where Damages Start	BENEFITS WITH SCHEME 1 IMPROV.*	
			Remaining Damages Within 100-Year Flood Plain	Average Annual Benefits
	(1)	(2)	(3)	(4)
Reach A				
Residential	$ 400	3	0	400
Public Properties	800	3	0	800
Reach B				
Residential	300	3	0	300
Business	8200	3	600	7600
Public Properties	2600	3	200	2400
Reach C				
Residential	4000	9	900	3100
Business	19200	7	4300	14900
Public Properties	2700	4	200	3500
TOTAL	$38,200		$6,200	$32,000

* Economic evaluation was based on development within the 100-year flood plain.

TABLE A-2

TOTAL VALUE AND AREA OF EXISTING DEVELOPMENT EXCLUDING LAND BY REACH

Reach	Acre	No. of Residential Structures	Value of Residential Structure Excl. Contents	No. of Business Structures	Value of Commercial & Industrial Properties
10-YEAR FLOOD PLAIN					
A	485	18	$104,600	0	$ 0
B	99	27	103,500	7	224,000
C	195	67	632,500	1	1,200,000
TOTAL	779	112	$840,600	8	$1,424,000
100 YEAR FLOOD PLAIN					
A	656	31	$165,600	0	$ 0
B	230	74	311,000	11	579,000
C	317	140	1,233,000	4	3,050,000
TOTAL	1,203	245	$1,709,000	15	$3,629,000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WINSTON-SALEM
GREENSBORO
DURHAM
RALEIGH
ASHEVILLE
SALISBURY
NORTH CAROLINA
NEW BERN
SPARTANBURG
GREENVILLE
MAP AREA
SOUTH CAROLINA
FLORENCE
WILMINGTON
COLUMBIA
SUMTER
GEORGIA
MYRTLE BEACH
ORANGEBURG
CHARLESTON
ATLANTIC
OCEAN
VICINITY MAP
N
SUMTER
BROAD
MILLER
DRIVE
CAROLINA
MILTON
POINSETTE DR
CROSSWELL
CHARLOTTE AVE
GUIGNARD
CITY LIMITS
CALHOUN
HAMPTON
LIBERTY
BARTLETTE ST
OAKLAND
LORING
MAIN
SCL RR
END OF PROPOSED PROJECT
WATERSHED
BOUNDARY
BROOKLYN ST
BOULEVARD
FULTON
RADICAL RD
MIMS
HOYT
MANNING AVE
TURKEY CREEK
REYNOLD-NELSON
BLVD
SCALE - IN - MILES
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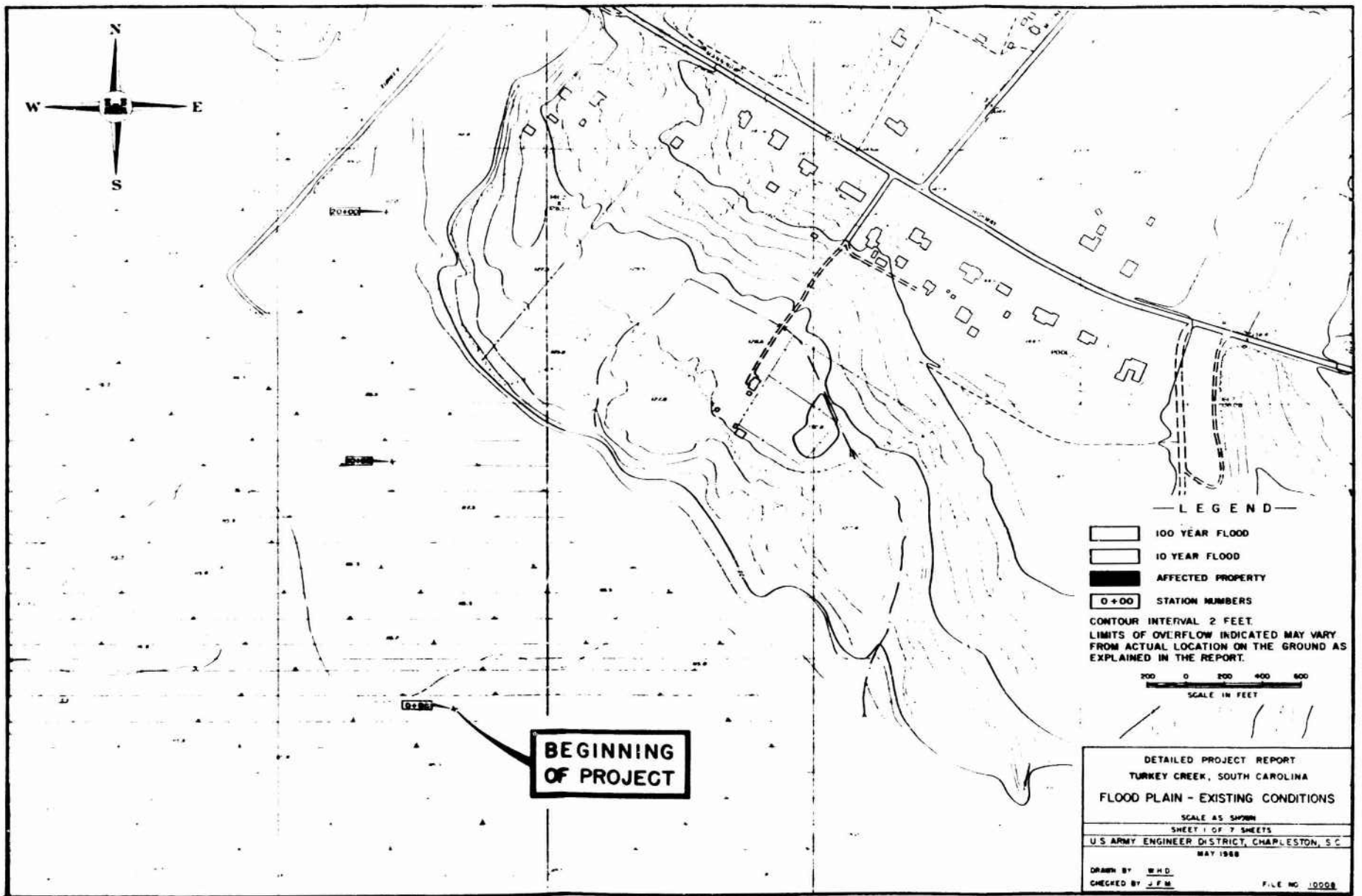
BEGINNING OF PROPOSED PROJECT
A2
A3
A4
A5
A6
A7
A8
76
378
15
401
521
NOTE -
INDICATES PLATE NUMBER & AREA COVERED BY INUNDATION MAP
TURKEY CREEK
SOUTH CAROLINA
DETAIL PROJECT REPORT
GENERAL MAP & INDEX
SCALE AS SHOWN
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
SUBMITTED
RECOMMENDED
APPROVED
CHIEF, ENGINEERING DIVISION

PLATE A1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BEGINNING OF PROJECT
—LEGEND—
100 YEAR FLOOD
10 YEAR FLOOD
AFFECTED PROPERTY
0+00 STATION NUMBERS
CONTOUR INTERVAL 2 FEET.
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200 0 200 400 600
SCALE IN FEET
DETAILED PROJECT REPORT
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FLOOD PLAIN - EXISTING CONDITIONS
SCALE AS SHOWN
SHEET 1 OF 7 SHEETS
U.S ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
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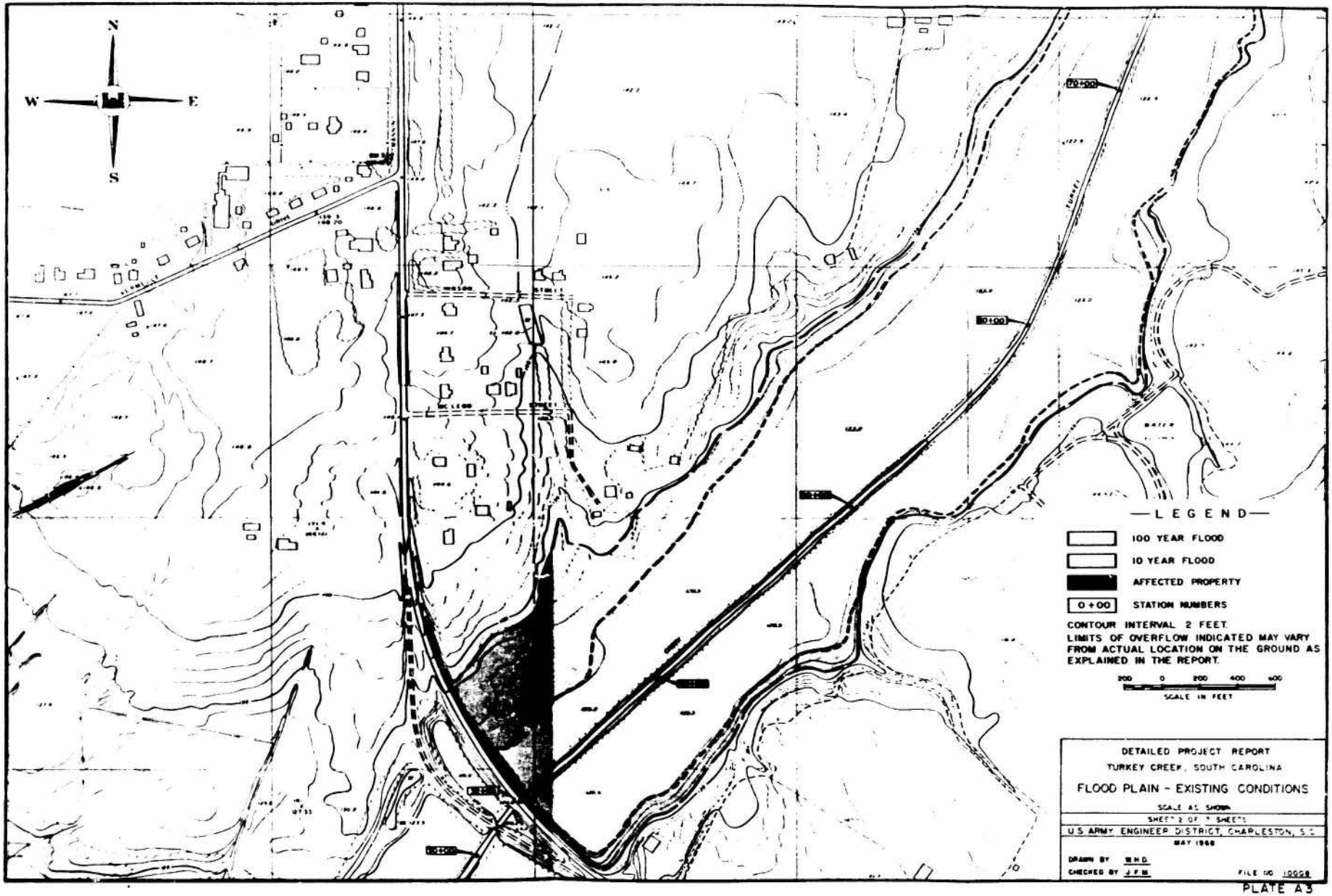
CHECKED BY J.F.M.
FILE NO. 10008

PLATE A2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10 YEAR FLOOD
AFFECTED PROPERTY
0+00 STATION NUMBERS
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SCALE IN FEET
DETAILED PROJECT REPORT
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SCALE AS SHOWN
SHEET 2 OF 7 SHEETS
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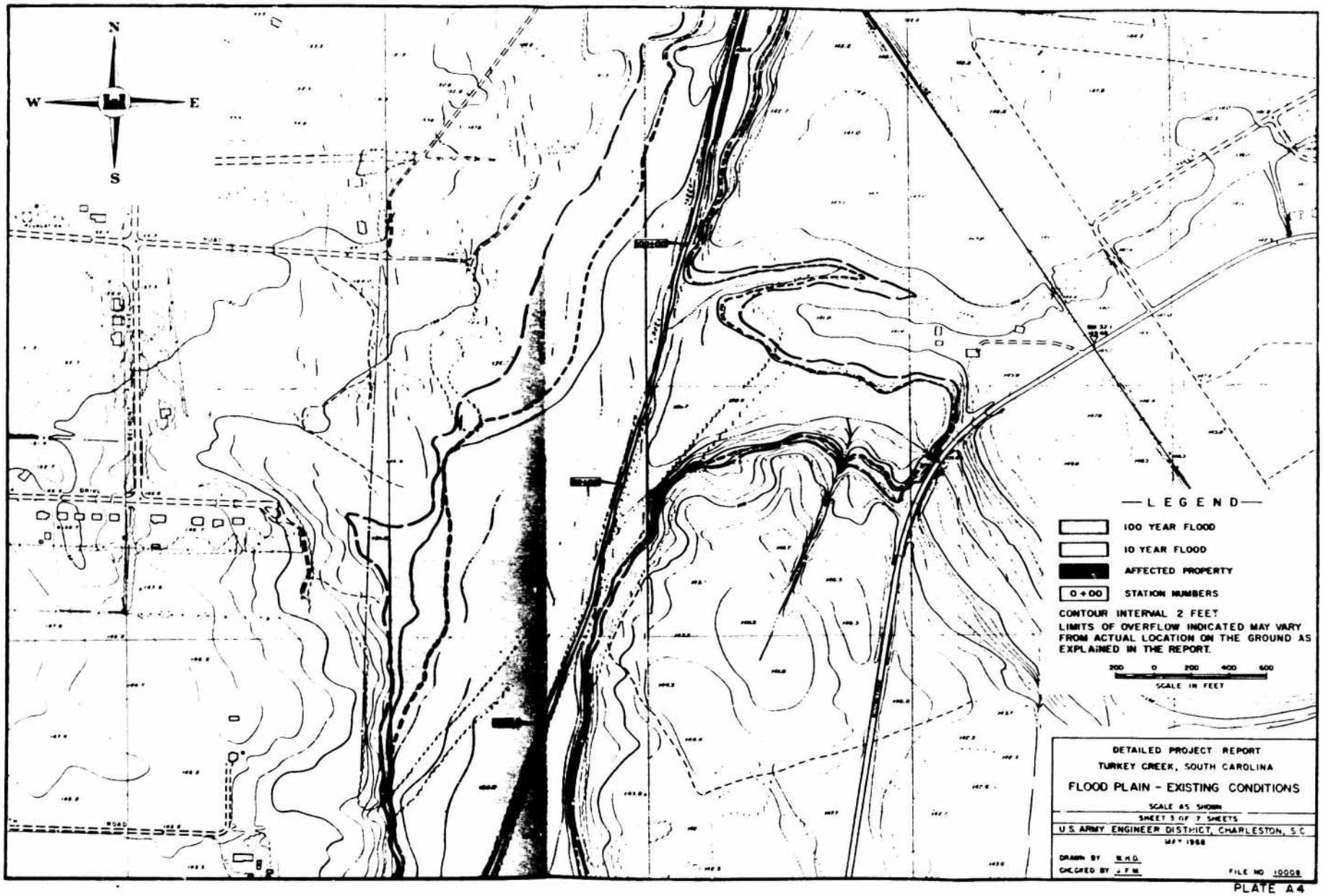
PLATE A3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AFFECTED PROPERTY
0+00 STATION NUMBERS
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MAY 1968
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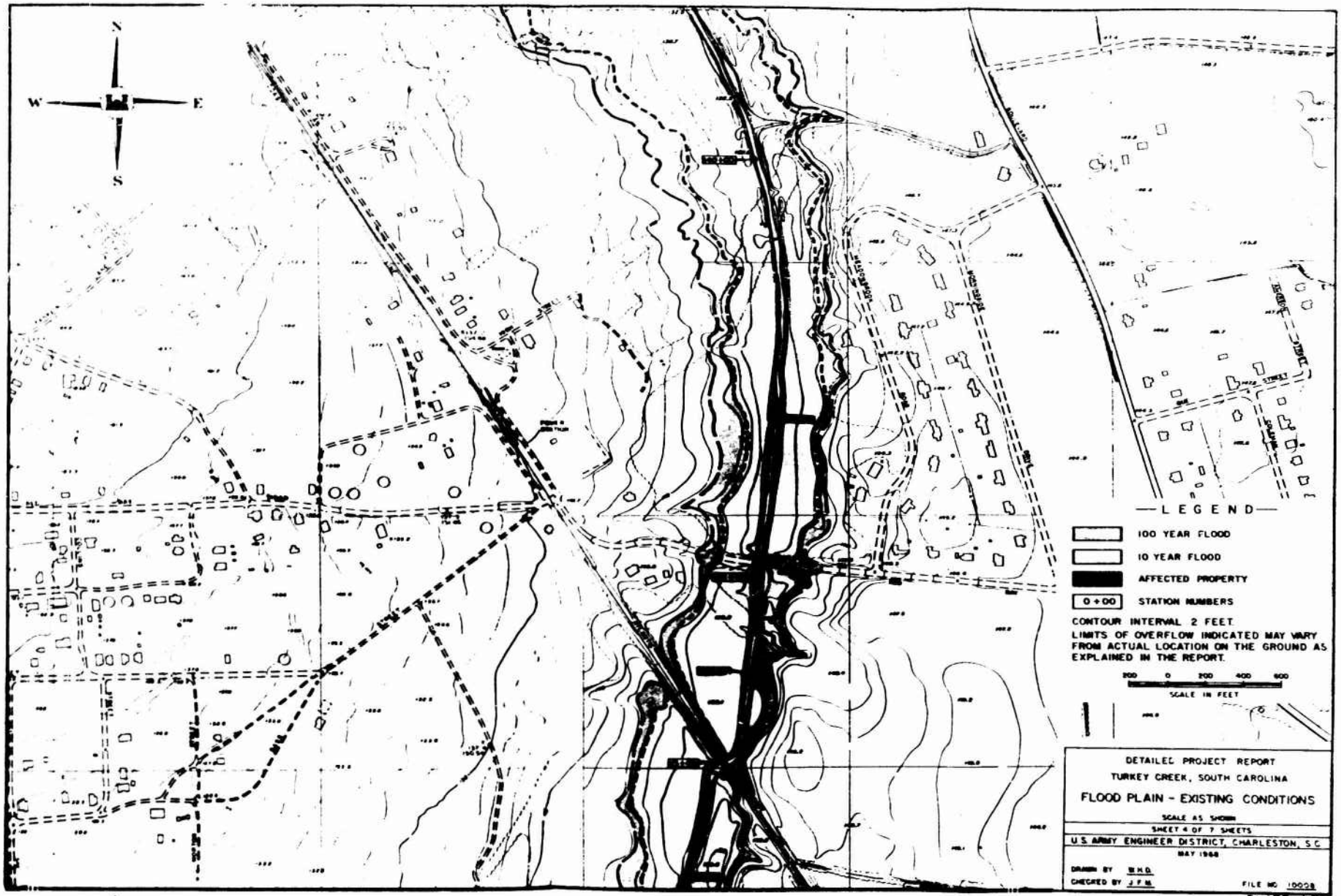
PLATE A4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10 YEAR FLOOD
AFFECTED PROPERTY
0+00 STATION NUMBERS
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SCALE IN FEET
DETAILED PROJECT REPORT
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FLOOD PLAIN - EXISTING CONDITIONS
SCALE AS SHOWN
SHEET 4 OF 7 SHEETS
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
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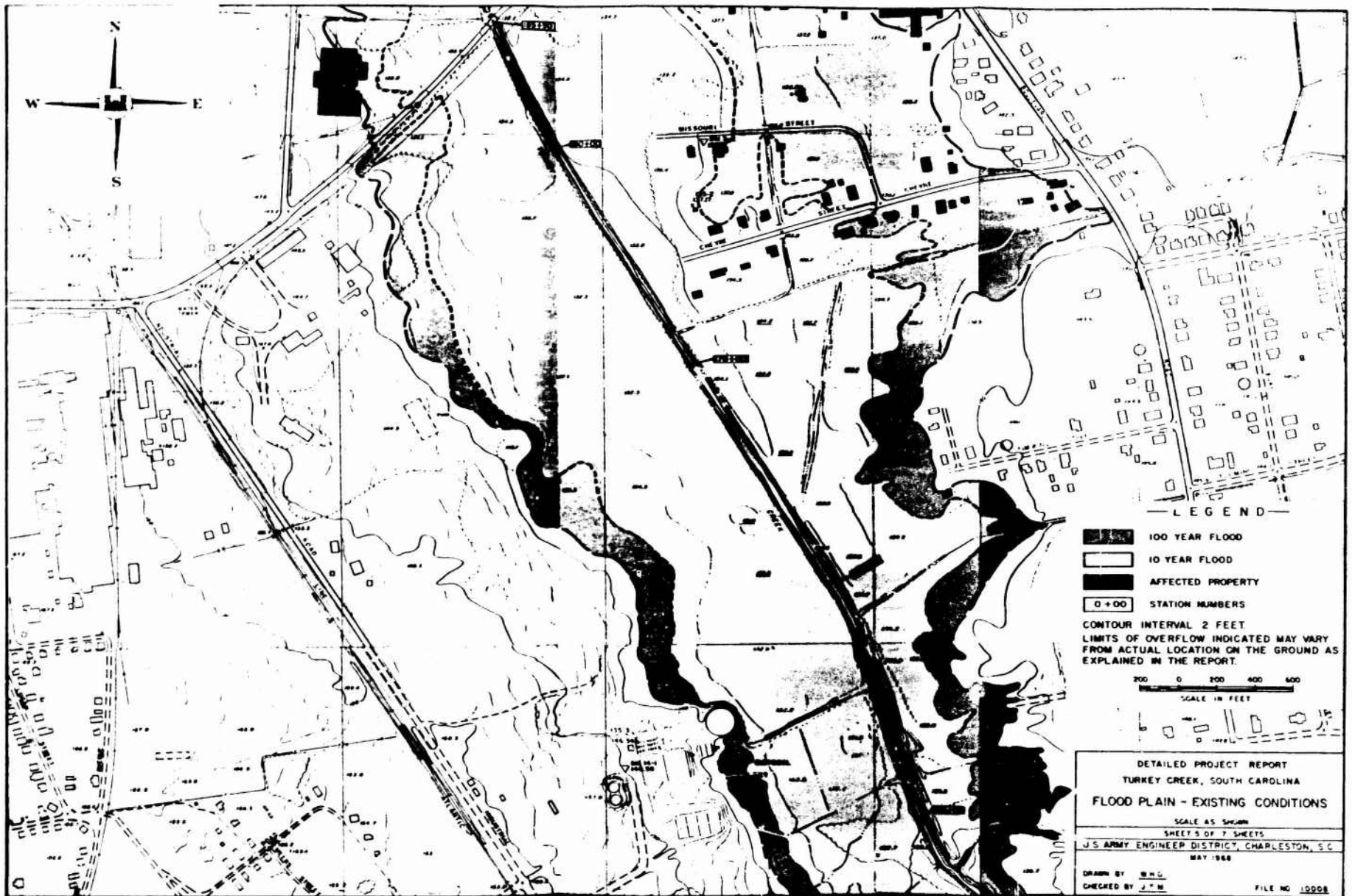
PLATE A5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LEGEND
100 YEAR FLOOD
10 YEAR FLOOD
AFFECTED PROPERTY
0+00 STATION NUMBERS
CONTOUR INTERVAL 2 FEET
LIMITS OF OVERFLOW INDICATED MAY VARY FROM ACTUAL LOCATION ON THE GROUND AS EXPLAINED IN THE REPORT.
200 0 200 400 600
SCALE IN FEET
DETAILED PROJECT REPORT
TURKEY CREEK, SOUTH CAROLINA
FLOOD PLAIN - EXISTING CONDITIONS
SCALE AS SHOWN
SHEET 5 OF 7 SHEETS
U.S. ARMY ENGINEER DISTRICT, CHARLESTON, S.C.
MAY 1968
DRAWN BY W.H.G.
CHECKED BY J.T.M.
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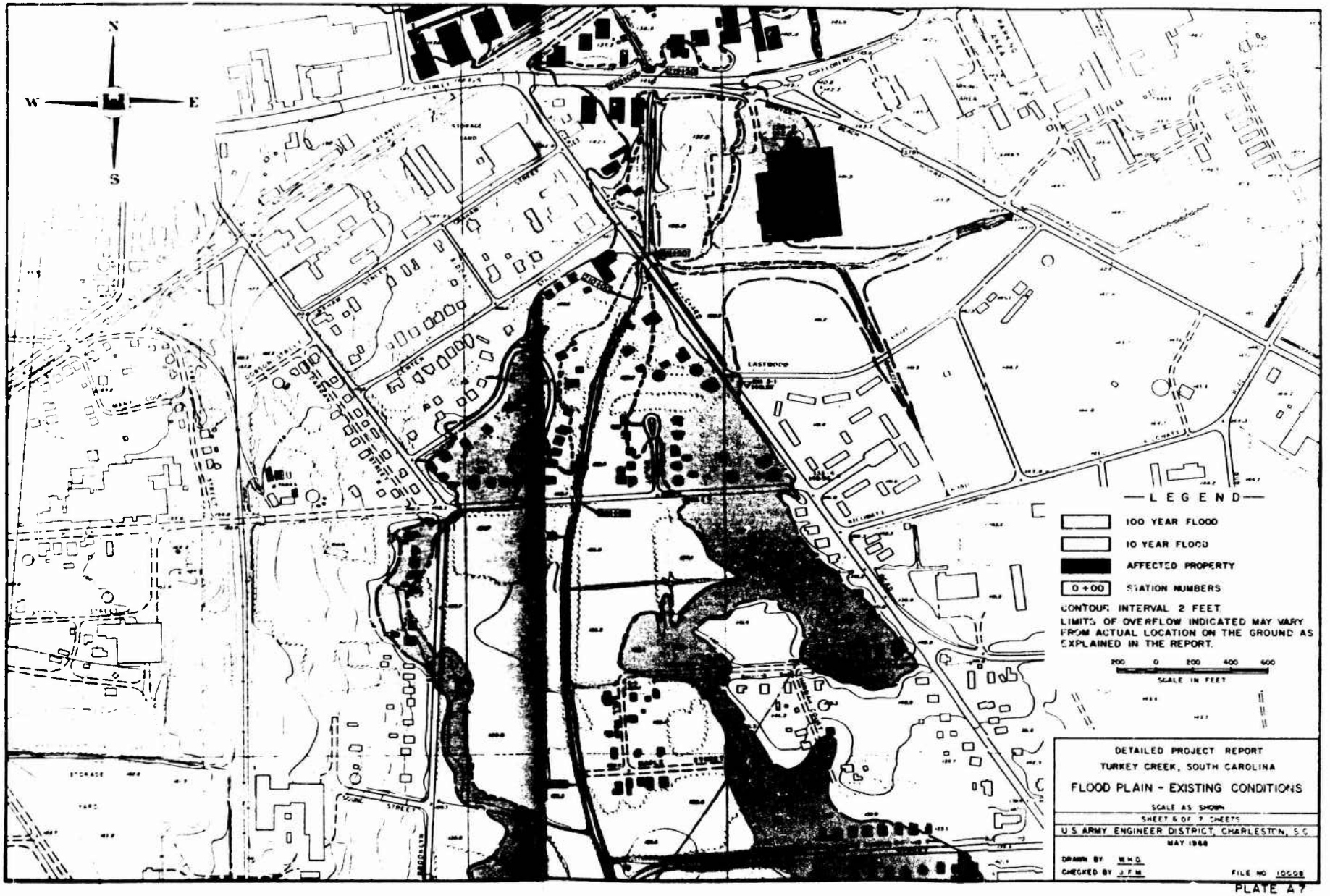
PLATE A6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100 YEAR FLOOD
10 YEAR FLOOD
AFFECTED PROPERTY
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CONTOUR INTERVAL 2 FEET
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SCALE IN FEET
DETAILED PROJECT REPORT
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FLOOD PLAIN - EXISTING CONDITIONS
SCALE AS SHOWN
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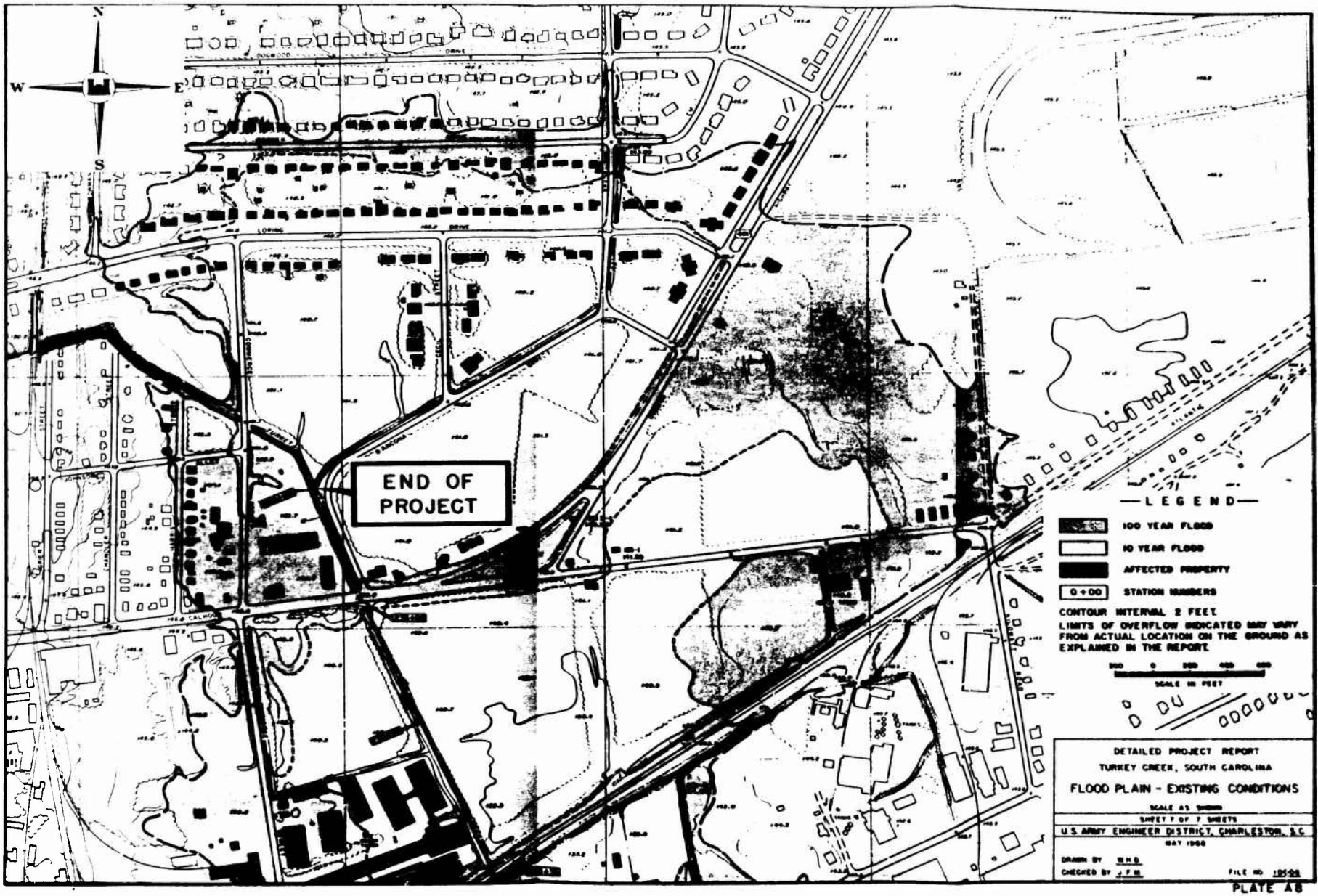
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DETAILED PROJECT REPORT
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FLOOD PLAIN - EXISTING CONDITIONS
SCALE AS SHOWN
SHEET 7 OF 7 SHEETS
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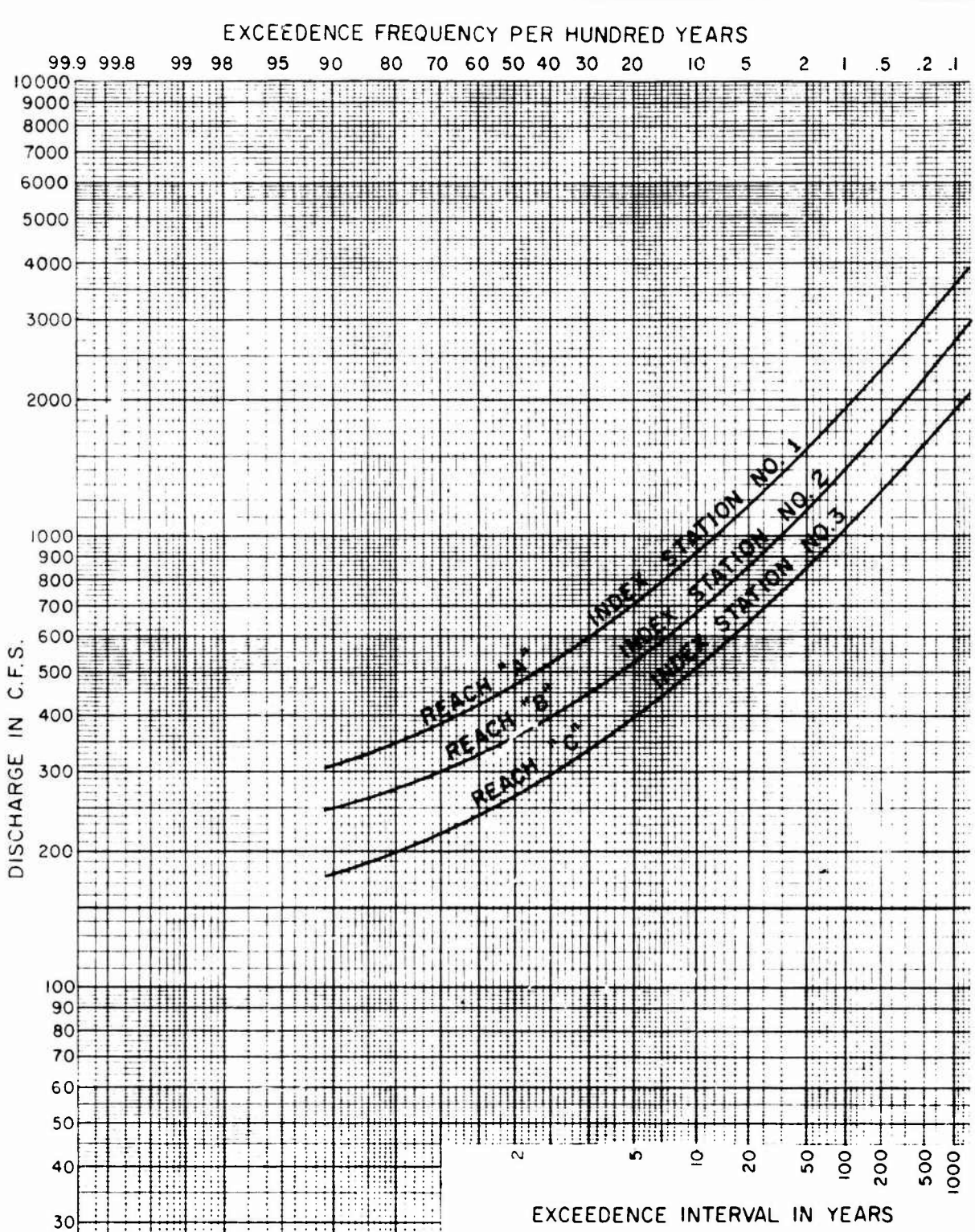
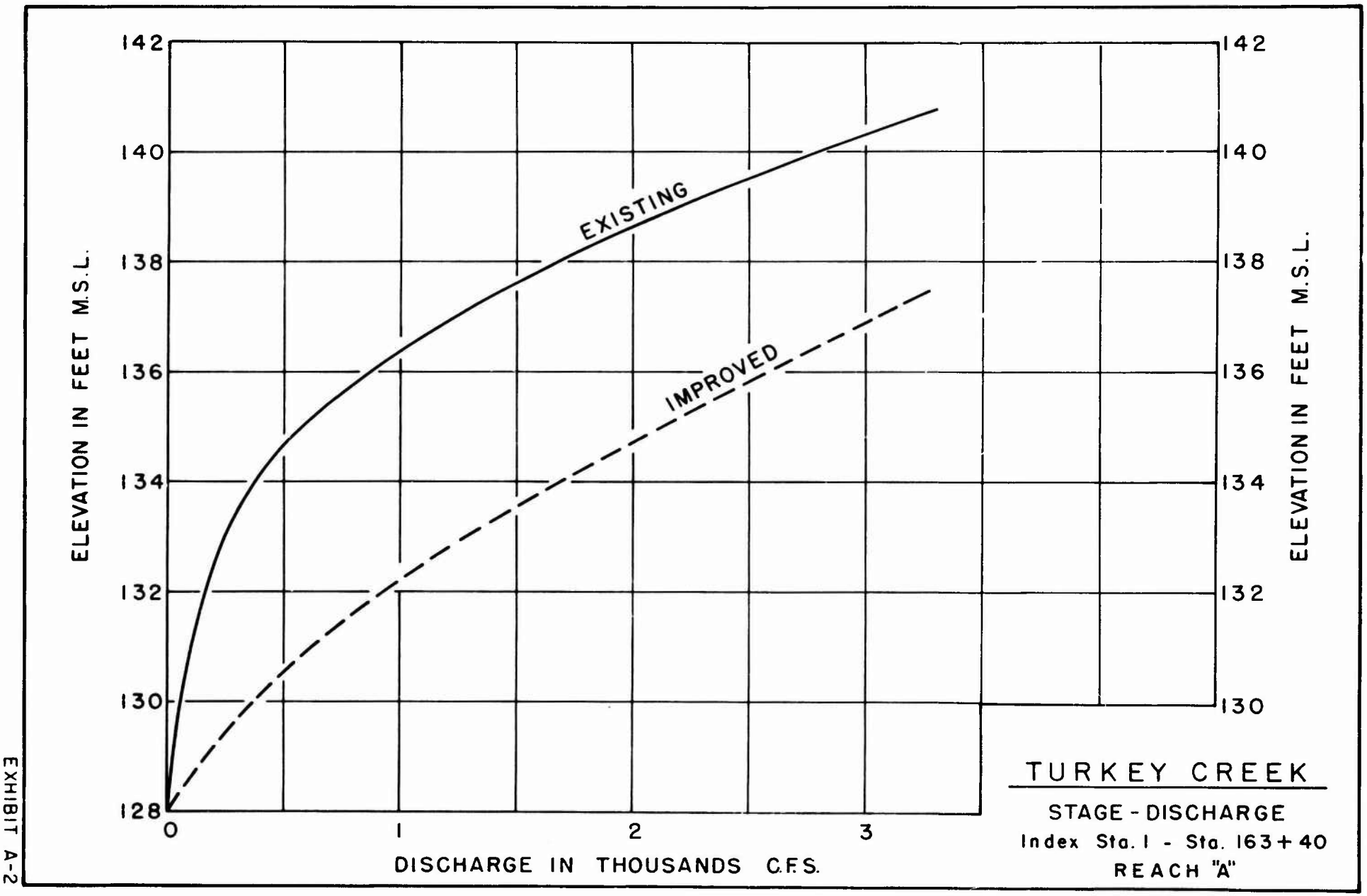


TURKEY CREEK
SUMTER, S. C.

DISCHARGE—FREQUENCY CURVES

EXHIBIT A-1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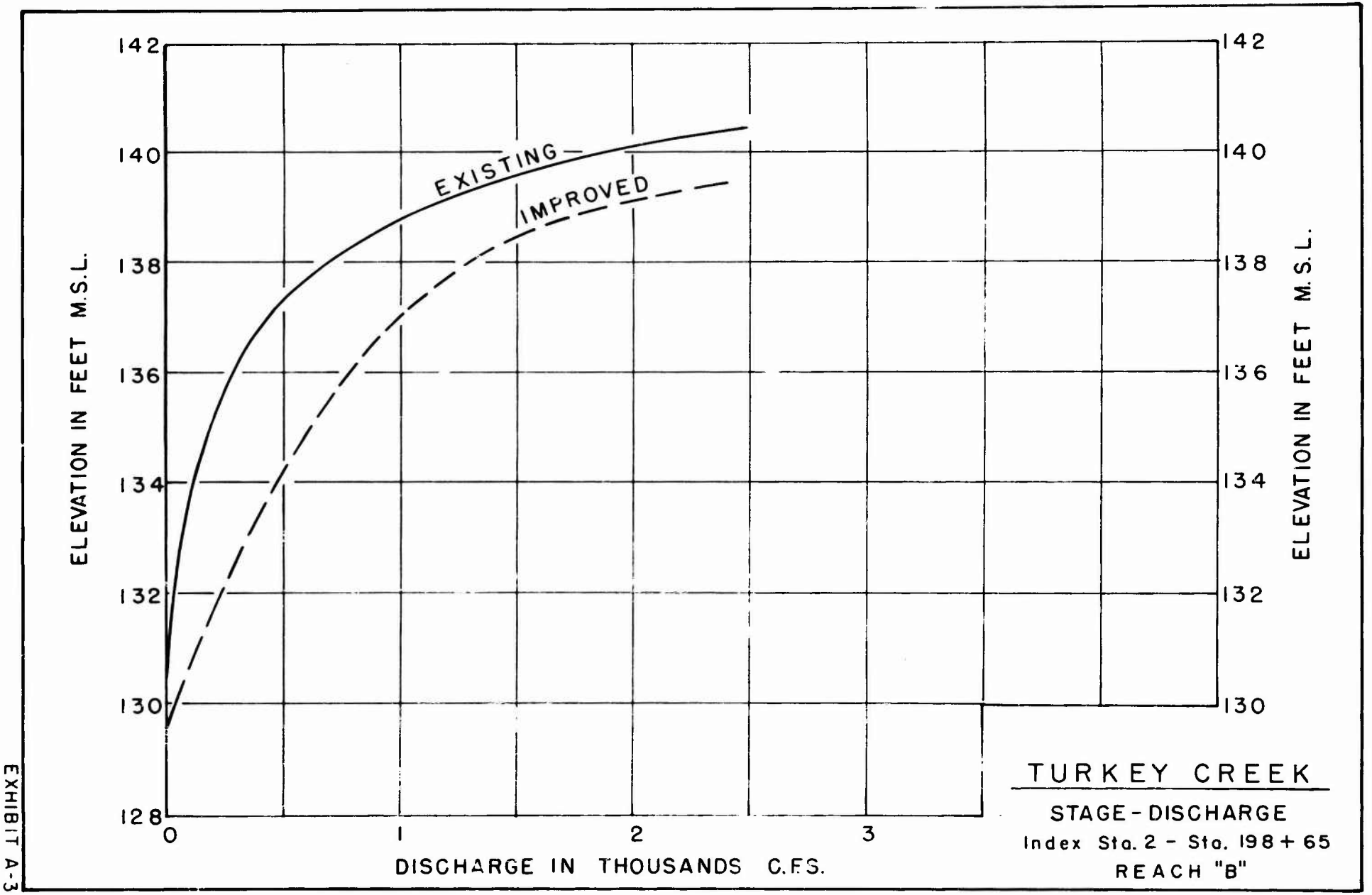
EXISTING
IMPROVED
ELEVATION IN FEET M.S.L.
ELEVATION IN FEET M.S.L.
DISCHARGE IN THOUSANDS C.F.S.
TURKEY CREEK
STAGE - DISCHARGE
Index Sta. 1 - Sta. 163+40
REACH "A"
EXHIBIT A-2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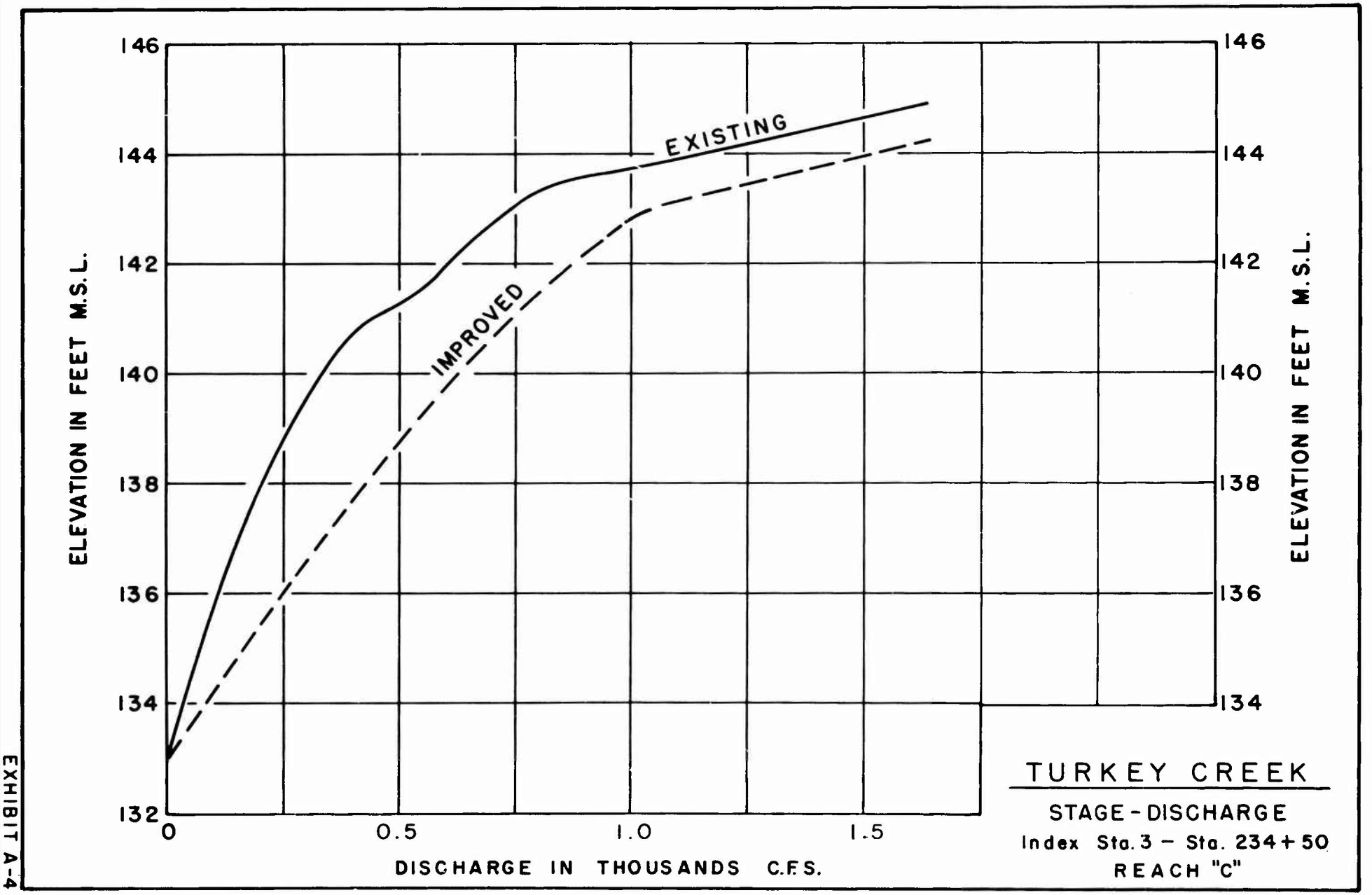
ELEVATION IN FEET M.S.L.
DISCHARGE IN THOUSANDS C.F.S.
TURKEY CREEK
STAGE - DISCHARGE
Index Sta. 2 - Sta. 198 + 65
REACH "B"
EXHIBIT A-3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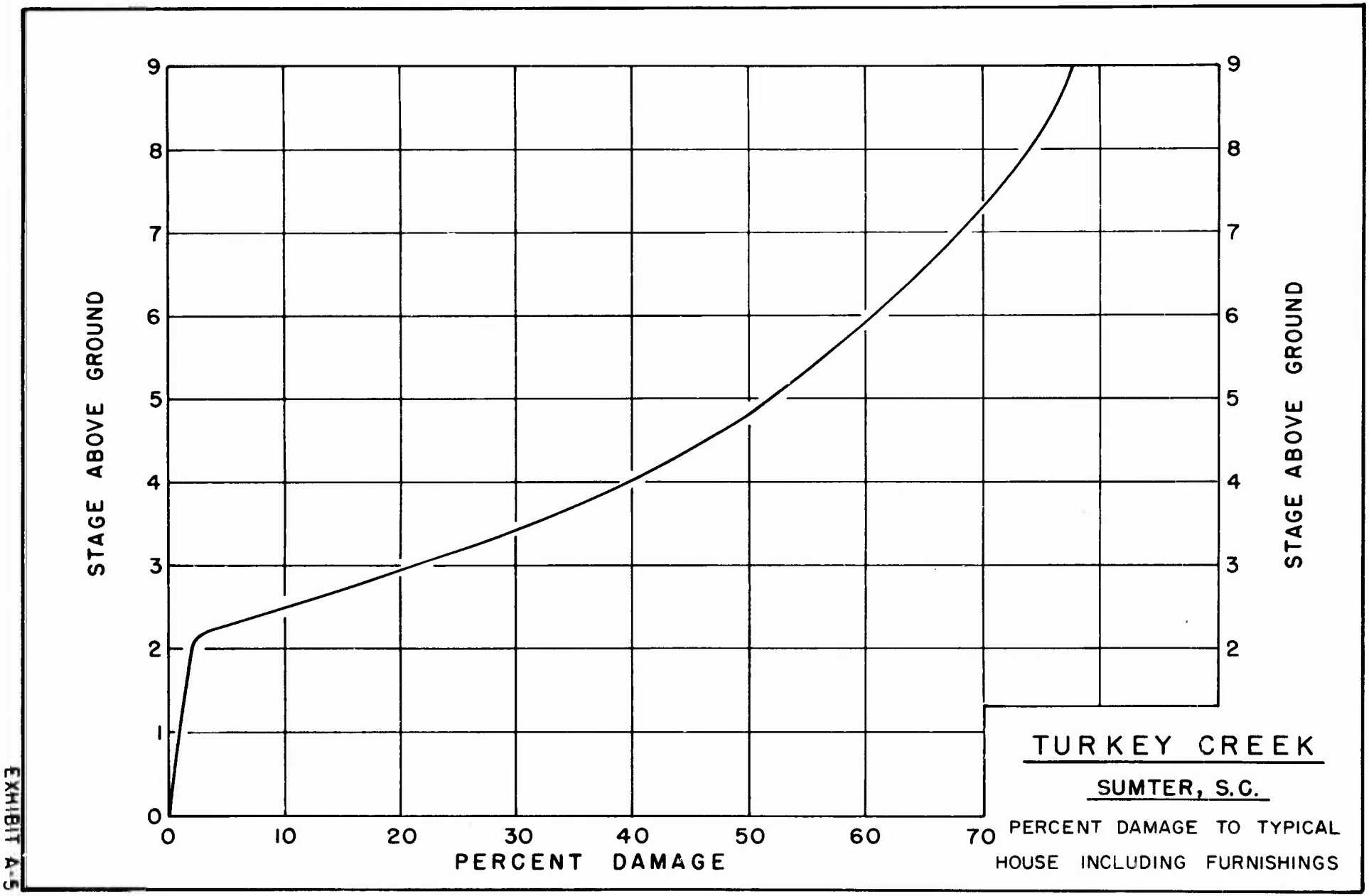
TURKEY CREEK
STAGE - DISCHARGE
Index Sta. 3 – Sta. 234+50
REACH "C"

EXHIBIT A-4


STAGE ABOVE GROUND
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30
40
50
60
70
PERCENT DAMAGE
STAGE ABOVE GROUND
TURKEY CREEK
SUMTER, S.C.
PERCENT DAMAGE TO TYPICAL HOUSE INCLUDING FURNISHINGS

EXHIBIT A-5

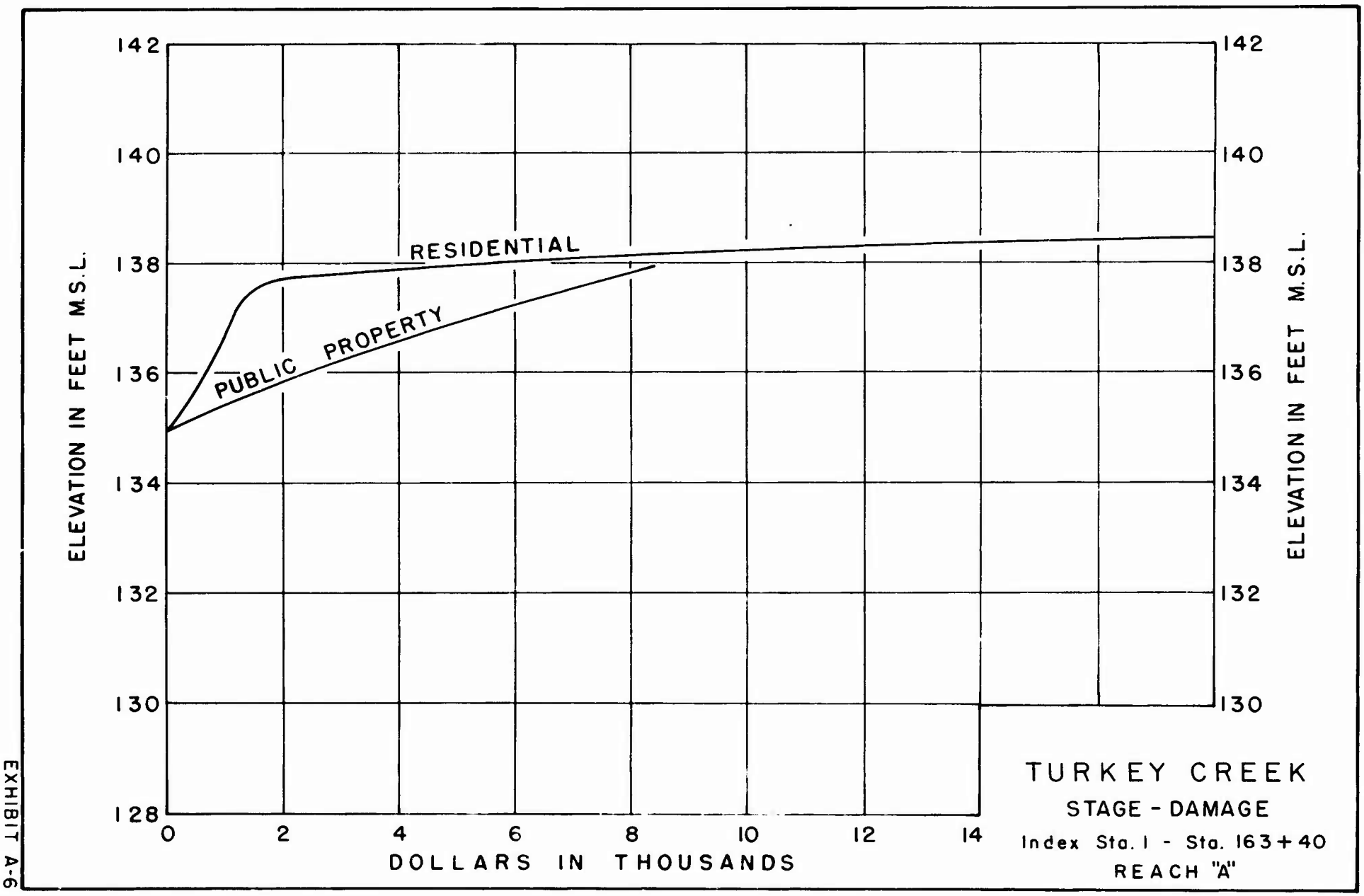
142
140
138
136
134
132
130
128
0
2
4
6
8
10
12
14
RESIDENTIAL
PUBLIC PROPERTY
ELEVATION IN FEET M.S.L.
ELEVATION IN FEET M.S.L.
DOLLARS IN THOUSANDS
TURKEY CREEK
STAGE - DAMAGE
Index Sta. 1 - Sta. 163+40
REACH "A"

EXHIBIT A-6

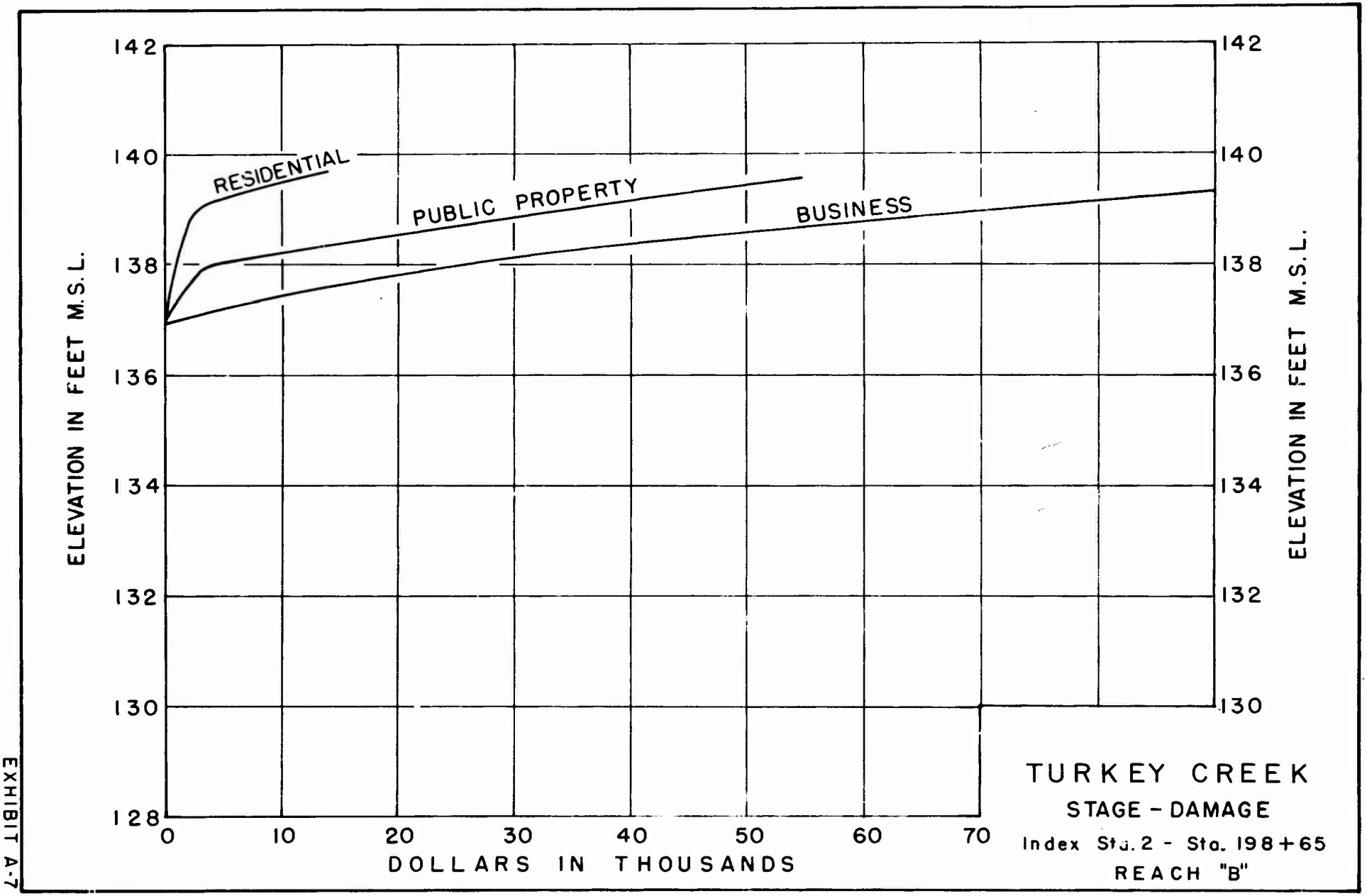
142
140
138
136
134
132
130
128
0
10
20
30
40
50
60
70
RESIDENTIAL
PUBLIC PROPERTY
BUSINESS
ELEVATION IN FEET M.S.L.
ELEVATION IN FEET M.S.L.
DOLLARS IN THOUSANDS
TURKEY CREEK
STAGE - DAMAGE
Index Sta. 2 - Sta. 198+65
REACH "B"

EXHIBIT A-7

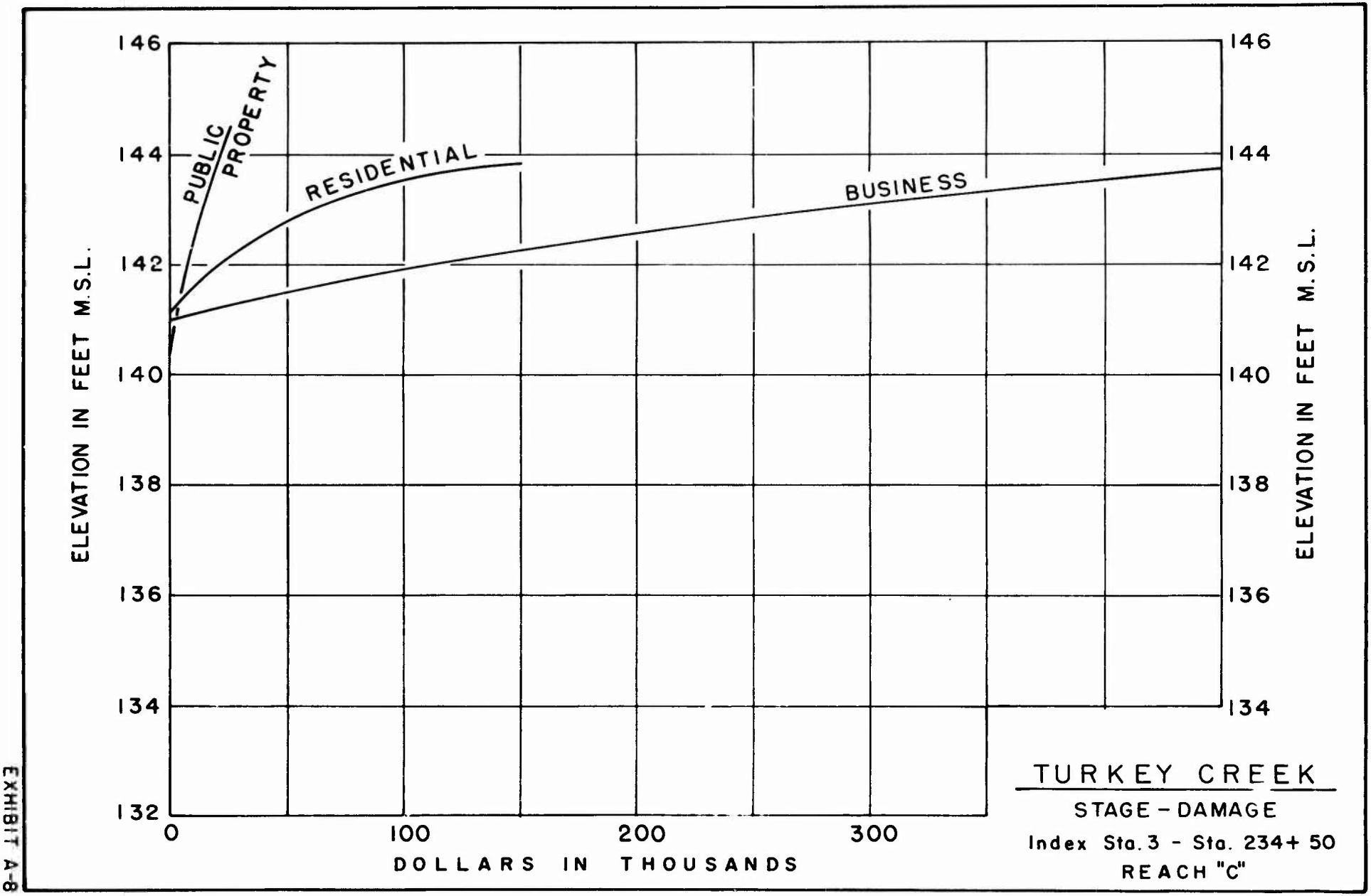
146
144
142
140
138
136
134
132
0
100
200
300
DOLLARS IN THOUSANDS
ELEVATION IN FEET M.S.L.
PUBLIC PROPERTY
RESIDENTIAL
BUSINESS
TURKEY CREEK
STAGE - DAMAGE
Index Sta. 3 - Sta. 234+ 50
REACH "C"

EXHIBIT A-8

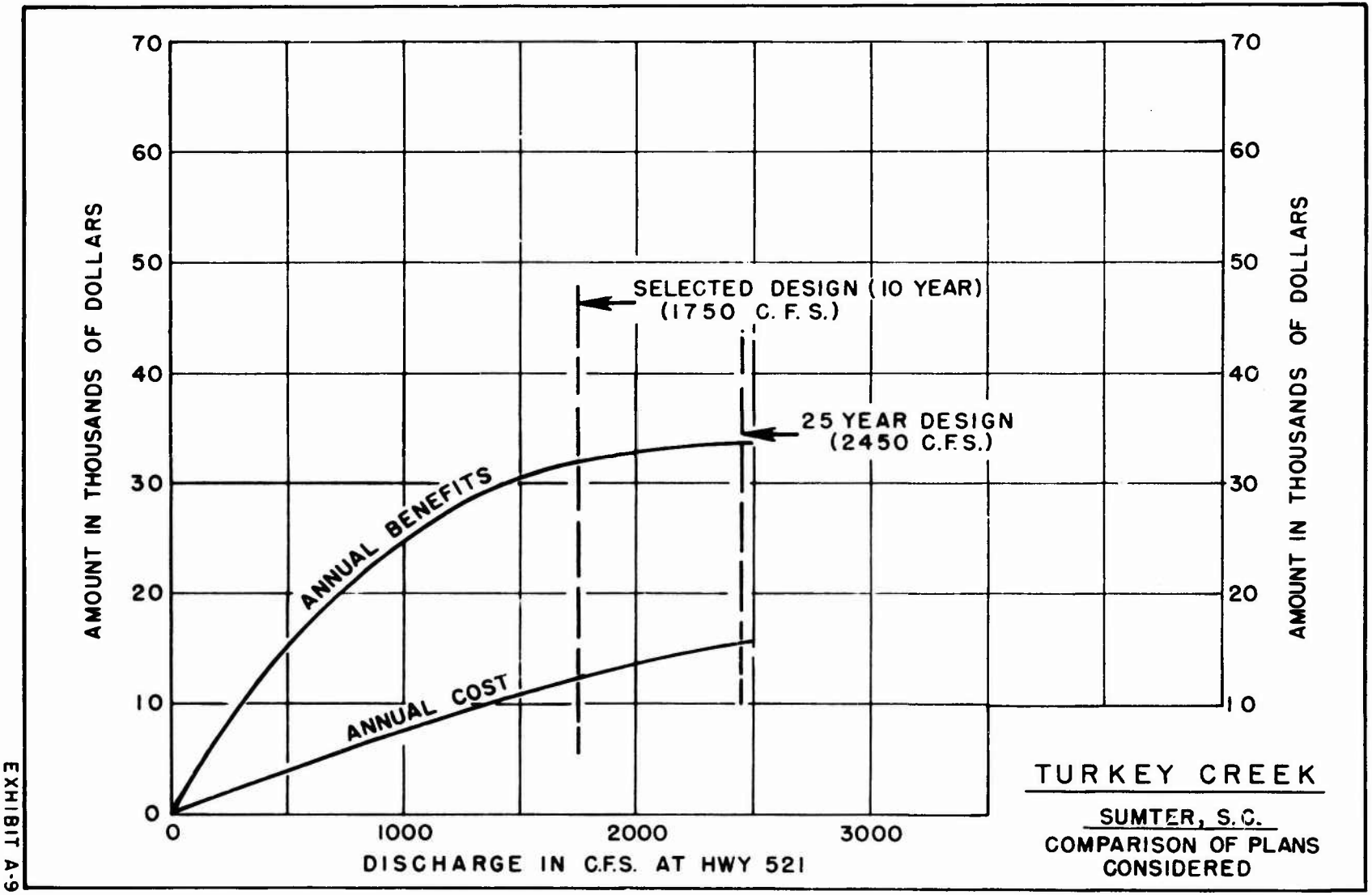
70
60
50
40
30
20
10
0
AMOUNT IN THOUSANDS OF DOLLARS
SELECTED DESIGN (10 YEAR)
(1750 C. F. S.)
25 YEAR DESIGN
(2450 C.F.S.)
ANNUAL BENEFITS
ANNUAL COST
0
1000
2000
3000
DISCHARGE IN C.F.S. AT HWY 521
TURKEY CREEK
SUMTER, S.C.
COMPARISON OF PLANS
CONSIDERED

EXHIBIT A-9

DETAILED PROJECT REPORT

TURKEY CREEK, SOUTH CAROLINA

APPENDIX B

FLOOD PLAIN MANAGEMENT

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS
CHARLESTON, SOUTH CAROLINA

APPENDIX B

FLOOD PLAIN MANAGEMENT

INTRODUCTION

This flood plain information appendix is based on an investigation of the flood characteristics of Turkey Creek in the vicinity of Sumter, South Carolina. The major objectives of this appendix are: (a) to compile in a clear and useful form, information on floods and flood hazards, including areas subject to flooding; (b) to encourage optimum and prudent use of the stream valley by providing state and local agencies with factual basis for reducing future flood damages through well-planned use of the flood plain; (c) to publicize available information for the guidance of private citizens and interests on the use and hazards of using the flood plain; and (d) to reduce future expenditures for the alleviation of flood problems arising from improper use of the flood plain. The findings serve only to indicate the relationship between various flood profiles and the degree of risk associated with them. The determination of the degree of risk allowable in development of the flood plains is the responsibility of local interests.

This report contains maps, profiles, and cross sections which indicate the extent of flooding that has been experienced and that which might occur in the future along Turkey Creek. From the maps, profiles, and cross sections, the depth of probable flooding at any location, by occurrence of the Intermediate Regional or Standard Project Flood may be learned. With this information, floor levels for buildings may be planned high enough to avoid flood damage, or other measures taken to minimize flood hazards.

The information and suggestions in this report are presented for consideration and use in planning the development and regulation of the flood plain in the study area. This report is not intended to extend any Federal authority over zoning or other regulation of flood plain use.

The Charleston District of the Corps of Engineers will, upon request, provide technical assistance to Federal, State, and local agencies in the interpretation and use of the information contained in this report and will provide other related flood data, if available.

Past Floods. Several storms of recent years have caused widespread flooding in the vicinity of Sumter, South Carolina. Notable floods occurred in September 1945, June 1954, and September 1959.

The tropical storm of September 1945 produced the second flood of record on the Black River at Kingstree, S. C., based on a continuous stream gaging record at Kingstree from the year 1893. The storm released 1.4 inches of rain at Sumter on 16 September and 8.68 inches on the 17th, resulting in extensive flooding.

In June 1954, Sumter was the center of a local rainstorm which produced 1.20 inches of rainfall on the 17th and 6.96 inches on the 18th. Widespread flooding occurred along Turkey Creek.

The flood of September 1959, caused by tropical storm GRACIE, produced an 8.03 inch rainfall at Sumter, although the center of the storm passed about 50 miles west of Sumter.

Standard Project Flood. The Standard Project Flood is a flood of rare occurrence. It represents the critical flood run-off volume and peak discharge that may be expected from the most severe combination of meterological and hydrological conditions that are considered reasonably characteristic of the geographical region involved, excluding extremely rare conditions. The extreme meterological conditions used are derived from regional storms of record and referred to as the Standard Project Storm. The storm is then centered over the drainage basin above the area under study. The computed results reveal maximum run-off conditions for the selected storm.

The Standard Project Flood represents a "standard" against which the degree of protection finally selected for a project may be judged and compared with protection provided at similar projects in other localities.

The Standard Project Flood estimate must reflect a generalized analysis of flood potentialities in a region rather than an analysis of flood records at the specific locality. Basing the estimate exclusively on flood records could be misleading because of the inadequacies of records or abnormal sequences of hydrologic events during the period of streamflow observation.

Standard Project Flood determinations indicate that floods could occur along Turkey Creek in Sumter that would reach heights exceeding those of known past floods.

Intermediate Regional Flood. Intermediate Regional Flood is a flood that has an average frequency of occurrence of once in 100 years.

The elevation of the 100-Year Flood is used as a limiting elevation for certain Federally financed construction and will be useful in city and county planning.

Flood Frequency Relations. Frequency of flooding is expressed either in terms of "recurrence interval" or "probability." A 50-year flood is a flood with a recurrence interval of 50 years. This means that in a period of 200 years, a flood of this magnitude or larger would be would be equaled or exceed 4 times and a 100-year flood would be equaled or exceeded twice. The concept implies no regularity in the time of recurrence. The probability of occurrence of a 50-year flood in any given year is 1 in 50 or 0.02.

Flood Damages. Flood damages that would result from recurrence of major known floods would be substantial; even more extensive damages would be caused by the Intermediate Regional Flood and Standard Project Flood because of their wider extent, greater depths, and higher velocities.

Main Flood Season. Main Flood Season for the Upper Coastal Plain of South Carolina is in the summer or fall. From rainfall records, it is apparent that heavy or flood-causing storms are most likely to occur during the hurricane season which covers the larger portion of the productive growing season.

Velocities of Water along Turkey Creek during major floods are varying. This is due to the winding channel, contrasting slopes, and abrupt changes in topography. Channel velocities sometimes exceed five feet per second while overbank velocities might exceed one foot per second. Velocities of three feet per second or greater combined with water depth greater than three feet are considered hazardous to both life and property. Damage during floods in the Turkey Creek flood plain may be a result of inundation, water velocities, or a combination of both.

Duration of Floods in the vicinity of Sumter would depend upon the position, intensity, and duration of the flood producing storm. Discharge hydrograph determinations indicate that major floods on Turkey Creek would reach maximum stages about 8 hours after runoff begins on the upper portion of the basin.

Existing Regulations. At present there are no regulations pertaining to flood plain use.

Future Flood Heights that would be reached by the 25-year flood, the Intermediate Regional Flood, and the Standard Project Flood, after improved channel conditions are shown on Plate 3. The corresponding areas flooded are shown on Plates 4-10.

SUMMARY OF FLOOD SITUATION

In the past, flood damage has occurred along certain reaches of Turkey Creek. The three largest floods of recent years occurred in 1945, 1954, and 1959. It was established that the 1945 flood was the largest, but all three caused considerable damage to both public and private property. The 1945 flood was the second flood of record. Flood waters often inundate homes, businesses, and public property. The flood problem is becoming more acute as the city of Sumter and vicinity continues its rapid development.

Information on past floods was obtained by consulting local residents and city officials. From these investigations and from studies of possible future floods in the vicinity of Sumter, the local flood situation, both past and future, has been developed.

FLOOD PLAIN PLANNING

The following suggestions are presented for consideration and use in development of plans for regulation and use of the Turkey Creek flood plain. These suggestions are not intended to extend any Federal authority over zoning or other regulation of flood plain use.

The following list of uses are not recommended for flood plain areas. It is suggested that zoning ordinances, building codes, and sub-division regulations contain stipulations regarding such uses.

1a. Structures designed for or utilized for human habitation.

2a. Structures which could be floated away and thus further restrict bridge openings and other restricted sections of the stream.

3a. Filling of land or dumping of debris.

4a. Storage of materials, such as logs, lumber, tanks, etc., which could be floated away and restrict bridge openings.

5a. Storage of toxic chemicals or infalmmables such as gasoline.

6a. Any use permitted should be for the type of development that would not be appreciably damaged by flood waters.

7a. Any structures permitted should be designed, constructed, and placed so as to offer the minimum obstruction to the flow of water.

The following uses of flood plain areas are normally acceptable and would not create adverse effects if properly maintained.

1b. Open areas, such as loading areas, parking lots, or used car lots.

2b. Storage yards for equipment and material not subject to major damage by floods. Storage items should not contain inflammables and should not be able to float away.

3b. Open-type public and private recreational facilities such as public parks, golf courses, and driving ranges, drive-in theatres, fishing lakes and boat docks.

4b. Fairgrounds for circuses, carnivals, and other similar transient amusement enterprises.

5b. Agricultural uses, including farming, grazing, and livestock raising.

6b. Utilities, road and railroad bridges, transmission lines, but not transformer stations.

DETAILED PROJECT REPORT

TURKEY CREEK, SOUTH CAROLINA

APPENDIX C

COMMENTS FROM INTERESTED AGENCIES

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS
CHARLESTON, SOUTH CAROLINA

City of Sumter

South Carolina

May 17, 1968

ROBERT E GRAHAM
MAYOR

P. O. BOX 1449

Colonel Robert E. Rich
District Engineer
U.S. Army Engineer District, Charleston
P. O. Box 919
Charleston, South Carolina 29402

Dear Colonel Rich:

With reference to the Turkey Creek Flood Control Project, we wish to advise that the City of Sumter, and Sumter County, gives assurance of local cooperation as follows:

a. Provide, without cost to the United States, all lands, easements, right-of-way, utility relocations and alterations, and highway bridge construction and alterations necessary for project construction.

b. Hold and save the United States free from damages due to the construction works, and adjust all claims concerning water rights.

c. Maintain and operate the project after completition, without cost to the United States, in accordance with regulations prescribed by the Secretary of the Army.

d. Prescribe and enforce regulations to prevent obstructions or encroachments on the channel and rights-of-way necessary to proper functioning of the project.

e. At least annually, notify affected interests that the improvement will not provide complete flood protection.

f. In the development of the flood plain areas, necessary preventive measures will be adopted to minimize the future flood damages in accordance with guidance and technical data provided in this report and under the Flood Plain Management Service program of the Corps of Engineers.

We appreciate the efforts of the Corps of Engineers in developing this project and wish to assure full cooperation of both governing bodies in bringing this project to a successful conclusion.

Sincerely yours,

Robert E. Graham

ROBERT E. GRAHAM
MAYOR

William M. Hodge

WILLIAM M. HODGE
CHAIRMAN
SUMTER COUNTY BOARD OF COMMISSIONERS

REG:WMH:lc

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
Region IV

PUBLIC HEALTH SERVICE
50 Seventh Street, N. E., Room 404
Atlanta, Georgia 30323

May 17, 1968

Re: SANGO

Lt. Colonel Asher W. Harman, Jr.
Acting District Engineer
Charleston District, Corps of Engineers
P. O. Box 919
Charleston, South Carolina 29402

Dear Colonel Harman:

This is in response to your letter of May 7, 1968, requesting our review of Turkey Creek, Sumter, South Carolina flood control study. This proposed project should have no adverse effects on public health. If the channel improvement will reduce flooding levels along Turkey Creek, there will be actual environmental health benefits for the affected property owners.

With respect to the effect of the proposed channel improvement project on vector control, it is envisioned that there would be no significant adverse effects. With a reduction in flooding, there should be a decrease in the production of floodwater mosquitoes.

We appreciate the opportunity to comment on this flood control study. If we may be of further assistance, please advise.

Sincerely,

J. David Clem

J. David Clem
Regional Program Chief
Water Supply & Sea Resources

cc: Mr. W. T. Linton

STATE OF SOUTH CAROLINA WATER RESOURCES COMMITTEE

1411 BARNWELL STREET, COLUMBIA, S. C. 29201

TELEPHONE (803) 758-2511

May 15, 1968

Colonel Robert E. Rich
District Engineers
U. S. Army Engineer District
P. O. Box 919
Charleston, S. C. 29402

Dear Colonel Rich:

We are pleased to know of the favorable study that has been completed on Turkey Creek, Sumter, South Carolina to improve the channel under Section 205 of the 1948 Flood Control Act.

The South Carolina Water Resources Committee heartily endorses this project and urge that installation of the proposed improvements be started at the earliest possible date.

Sincerely yours,

Clair P. Guess, Jr.
Executive Director

CPGJr:vh

U...ED STATES DEPARTMENT OF AGRICUL...E
FOREST SERVICE
Southeastern Area, State and Private Forestry
Atlanta, Georgia 30323

IN REPLY REFER TO

3520

May 23, 196[illegible]

Reference your [illegible]/7/[illegible]

Lt. Colonel Asher W. Harman, Jr.
Acting District Engineer
Charleston District, Corps of Engineers
Charleston, South Carolina 29402

Dear Colonel Harman:

From our knowledge of the timber stands along Turkey Creek near Sumter, South Carolina, and the description of the proposed channel improvements, we doubt there will be any significant effects one way or the other on forestry as the result of your project.

As we understand, the proposed plans for improvement call for dredging a channel approximately the same depth as the present one. We recommend the dredging spoil be disposed of in such a manner as to prevent water from being impounded behind it and forming stagnant pools.

We appreciate being notified of this flood control study. Please send us copies of your reports as additional information is developed.

A copy of your 7 May 1968 letter and our reply is being sent to South Carolina State Forester John Tiller.

Sincerely yours,

D. A. CRAIG
Area Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
PEACHTREE-SEVENTH BUILDING
ATLANTA, GEORGIA 30323

June 28, 1968

District Engineer
U. S. Army, Corps of Engineers
Charleston, South Carolina

Dear Sir:

The Bureau of Sport Fisheries and Wildlife, in cooperation with the South Carolina Wildlife Resources Department, has made a reconnaissance of your proposed flood control project for Turkey Creek, Sumter County, South Carolina. This letter constitutes our report, prepared and submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Authority for your study is contained in Section 205, Flood Control Act of 1948.

We have reviewed project plans provided by your letter of May 7, 1968. These data indicate engineering works will consist of approximately 4.5 miles of stream channel excavation along Turkey Creek.

Fish and wildlife resources of the project area are of low to negligible value. Turkey Creek is located almost entirely within the metropolitan limits of the town of Sumter. This small stream has been previously channelized and receives substantial quantities of municipal and industrial effluents which detrimentally affect the sport fishery in downstream Pocataligo River. Wildlife habitat has been largely replaced by urban and industrial developments.

Construction and operation of the project will not have significant adverse effects on stream fishery or wildlife resources, and the project does not offer feasible opportunities for improvement of these resources.

This report has been reviewed by the South Carolina Wildlife Resources Department, and a copy of that agency's letter of concurrence is attached.

Please advise us of any changes made in project plans so that we can reevaluate the effects of the project on fish and wildlife resources, if necessary.

We appreciate the opportunity to comment on the proposed plan.

Sincerely yours,

C. Edward Carlson

C. Edward Carlson
Regional Director

Attachment

South Carolina
Wildlife Resources Department
P. O. BOX 167
COLUMBIA, S. C. 29202

DIVISION OF GAME
JAMES W. WEBB
DIRECTOR

June 24, 1968

Mr. Ernest C. Martin
Assistant Regional Director
Bureau of Sport Fisheries & Wildlife
Peachtree-Seventh Building
Atlanta, Georgia 30323

Dear Mr. Martin:

Thanks very much for your letter of June 12, 1968, enclosing a copy of your proposed report on Turkey Creek project in South Carolina.

We concur with the findings in your report.

Yours very truly,

James W. Webb

JAMES W. WEBB
Director

JWW/sa

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

901 Sumter Street
Columbia, S. C. 29201

November 22, 1968

Col. Burke W. Lee
Corps of Engineers
P. O. Box 919
Charleston, S. C. 29402

Dear Colonel Lee:

Thanks very much for the informational copy of the reconnaissance report on Turkey Creek, Sumter, South Carolina.

Since this proposed project is within the urban and built-up area of Sumter the Soil Conservation Service has no interest in the project.

Sincerely,

A. T. Chalk
State Conservationist